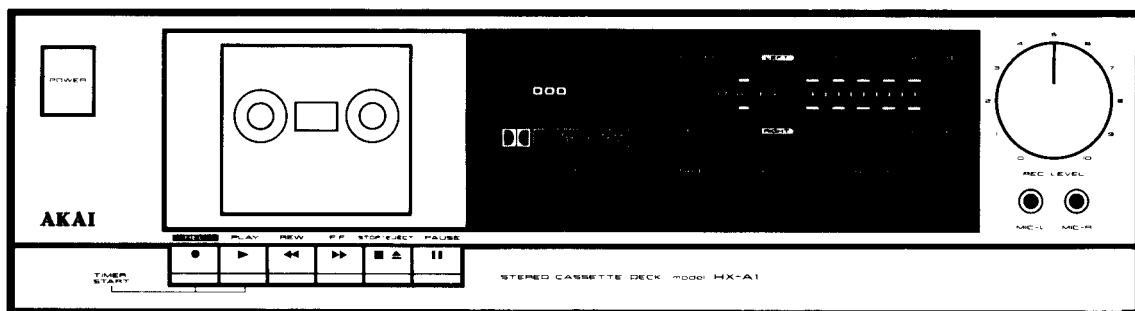


# AKAI SERVICE MANUAL

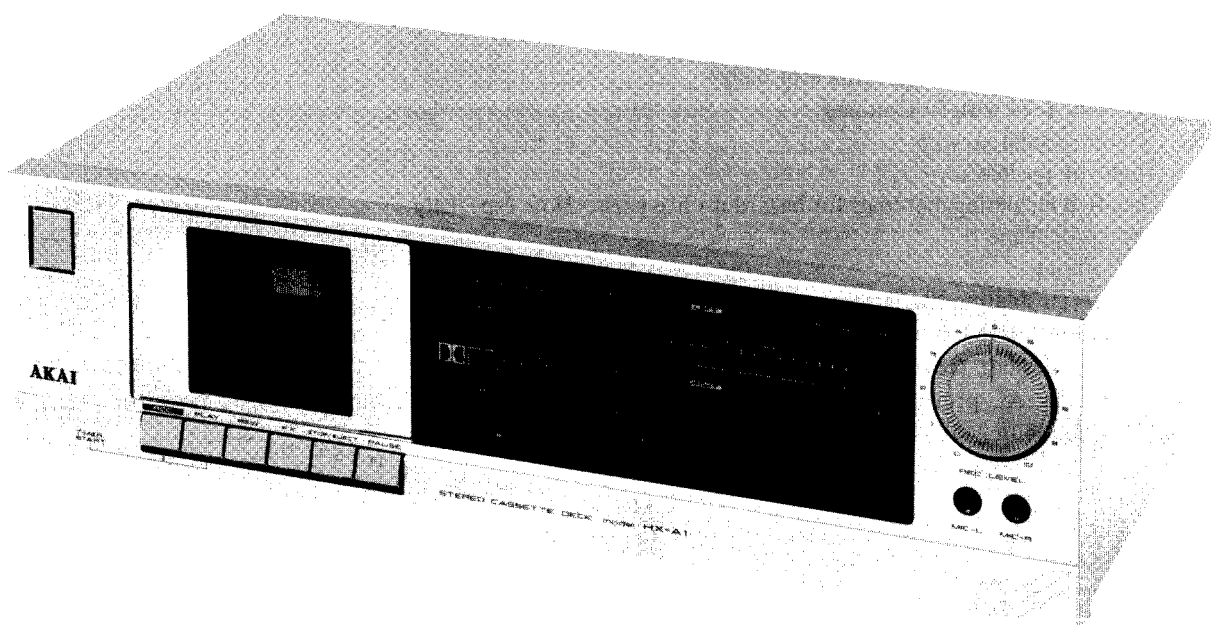


STEREO CASSETTE DECK

MODEL **HX-A1**

## ABBREVIATIONS FOR SERVICE MANUAL MODEL HX-A1

| ABBREVIATION | EXPLANATION               |
|--------------|---------------------------|
| ADJ          | ADJust (ADJustment)       |
| DIN          | Deutsche Industrie Normen |
| FREQ.        | FREQuency                 |
| IND          | INDicator                 |
| LED          | Light Emitting Diode      |
| MIC          | MICrophone                |
| MPX          | MultiPleX                 |
| PCB          | Printed Circuit Board     |
| S/N          | Signal to Noise (Ratio)   |
| SW           | SWitch                    |
| TR           | TRansistor                |



## STEREO CASSETTE DECK

MODEL **HX-A1**

|           |                      |    |
|-----------|----------------------|----|
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| SECTION 2 | PARTS LIST .....     | 13 |

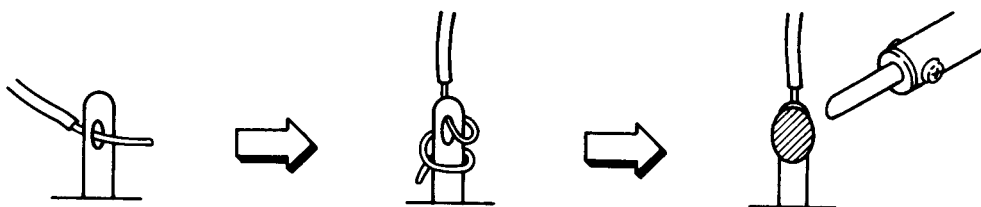
# SAFETY INSTRUCTIONS

## SAFETY CHECK AFTER SERVICING

Confirm the specified insulation resistance between power cord plug prongs and externally exposed parts of the set is greater than 10 Mohms, but for equipment with external antenna terminals (tuner, receiver, etc.) and is intended for **C** or **A**, specified insulation resistance should be more than 2.2 Mohms (ground terminals, microphone jacks, headphone jacks, line-in-out jacks etc.)

## PRECAUTIONS DURING SERVICING

1. Parts identified by the **Δ** symbol parts are critical for safety.  
Replace only with parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with specified replacements.  
Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
  - 1) Wires covered with PVC tubing
  - 2) Double insulated wires
  - 3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
  - 1) Insulation Tape
  - 2) PVC tubing
  - 3) Spacers (Insulating Barriers)
  - 4) Insulation sheets for transistors
  - 5) Plastic screws for fixing microswitch (especially in turntable)
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.



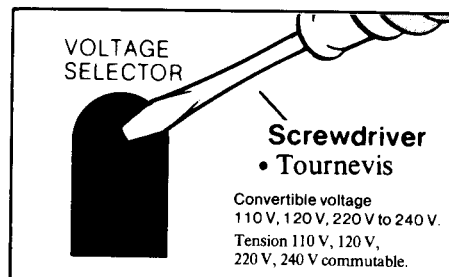
6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

## VOLTAGE CONVERSION

Models for Canada, USA, Europe, UK and Australia are not equipped with this facility. Each machine is preset at the factory according to destination, but some machines can be set to 110V, 120V, 220V, or 240V as required.

If your machine's voltage can be converted:

Before connecting the power cord, turn the VOLTAGE SELECTOR located on the rear panel with a screwdriver until the correct voltage is indicated.



## CYCLE CONVERSION

Cycle Conversion are not necessary since HX-A1 use a DC MOTOR.

---

SECTION 1

# SERVICE MANUAL

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For basic adjustments, measuring methods, and operating principles, refer to GENERAL TECHNICAL MANUAL.

# I. SPECIFICATIONS

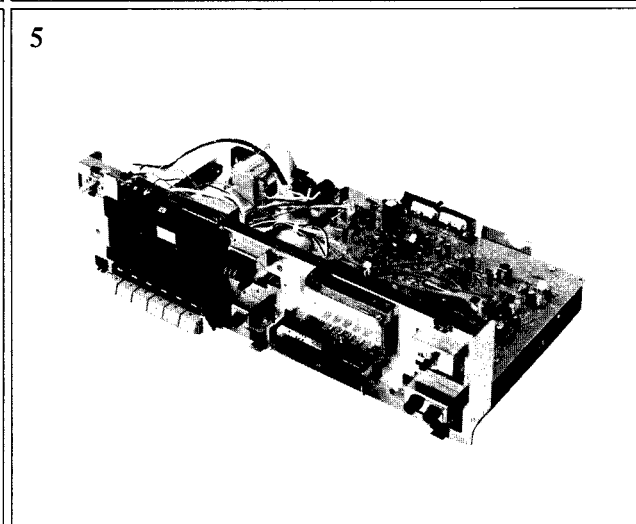
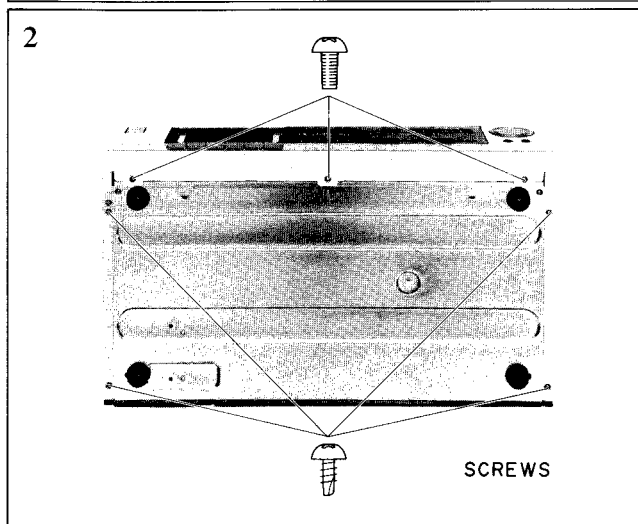
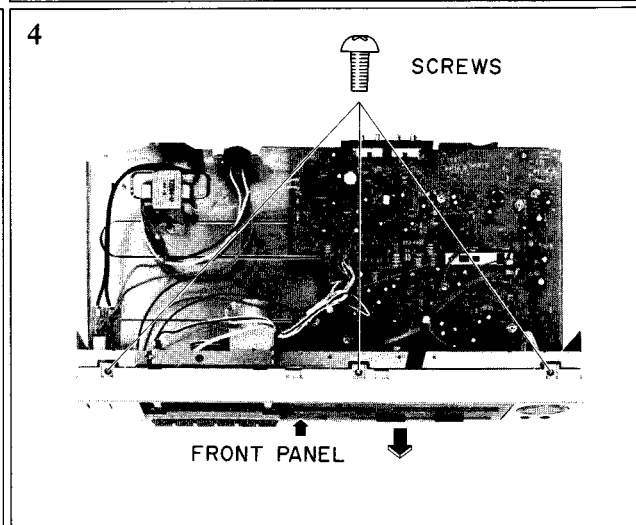
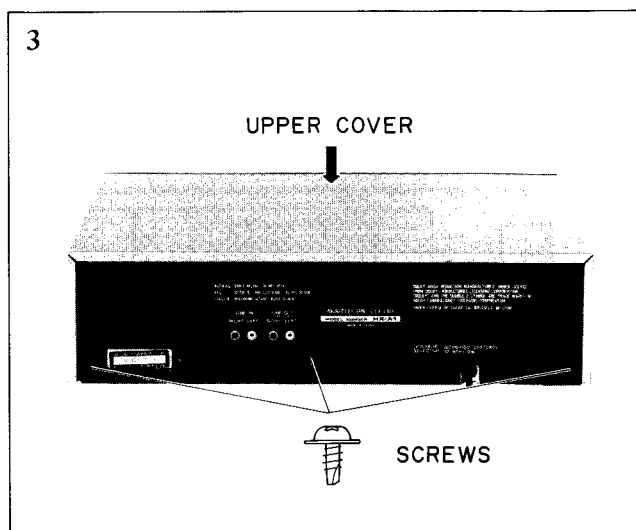
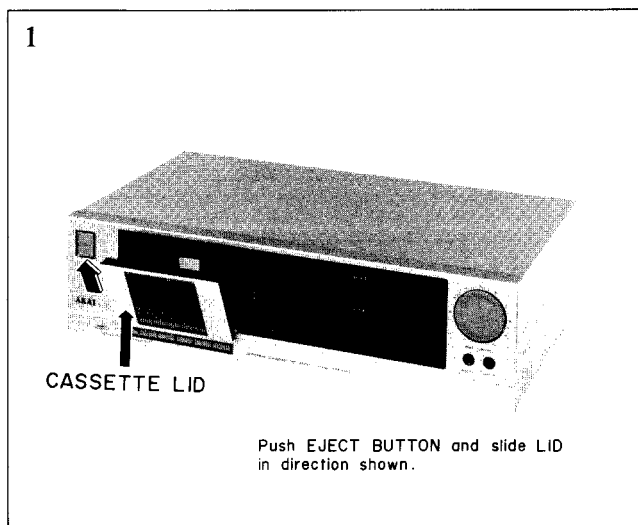
|                              |                                                                                                                                                                    |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TRACK SYSTEM                 | 4 Track 2 Channel Stereo System                                                                                                                                    |
| TAPE                         | Philips Type Cassette                                                                                                                                              |
| MOTOR                        | Electronically speed controlled DC Motor for capstan drive × 1                                                                                                     |
| HEADS                        | High Density head for recording/playback × 1<br>Erase head × 1                                                                                                     |
| TAPE WINDING TIME            | 100 sec. Using a C-60 cassette tape                                                                                                                                |
| WOW & FLUTTER                | 0.05% WRMS, 0.12% WTD (DIN)                                                                                                                                        |
| DISTORTION                   | 0.7% (Metal)                                                                                                                                                       |
| FREQUENCY RESPONSE           | Metal 30Hz to 17,000Hz ± 3dB<br>CrO <sub>2</sub> 30Hz to 16,000Hz ± 3dB<br>Normal 30Hz to 15,000Hz ± 3dB                                                           |
| S/N                          | 56dB (Metal Tape)<br>Dolby NR ON: Improves up to 5dB at 1kHz, 10dB above 5kHz                                                                                      |
| INPUT SENSITIVITY/IMPEDANCE  | LINE 70 mV/47 kohms<br>DIN 5 mV/10 kohms (HX-A1-G type)<br>MIC 0.25 mV/5 kohms                                                                                     |
| OUTPUT SENSITIVITY/IMPEDANCE | LINE 380 mV/1 kohms<br>DIN 380 mV/1 kohms (HX-A1-G type)<br>PHONES 0.3 mW (at 8 ohms)/56 ohms                                                                      |
| POWER REQUIREMENTS           | 120V, 60Hz for USA and Canada<br>220V, 50Hz for Europe except UK<br>240V, 50Hz for UK and Australia<br>110V/120V/220V/240V, 50/60Hz switchable for other countries |
| DIMENSIONS                   | 440(W) × 115(H) × 258(D) mm<br>(17.3 × 4.5 × 10.2 inches)                                                                                                          |
| WEIGHT                       | 3.3kg (7.3 lbs)                                                                                                                                                    |

\* For improvement purposes, specifications and design are subject to change without notice.

\* Noise Reduction manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

## II. DISMANTLING OF UNIT

In case of trouble, etc. necessitating dismantling, please dismantle in the order shown in the photographs. Reassemble in reverse order.



### III. CONTROLS

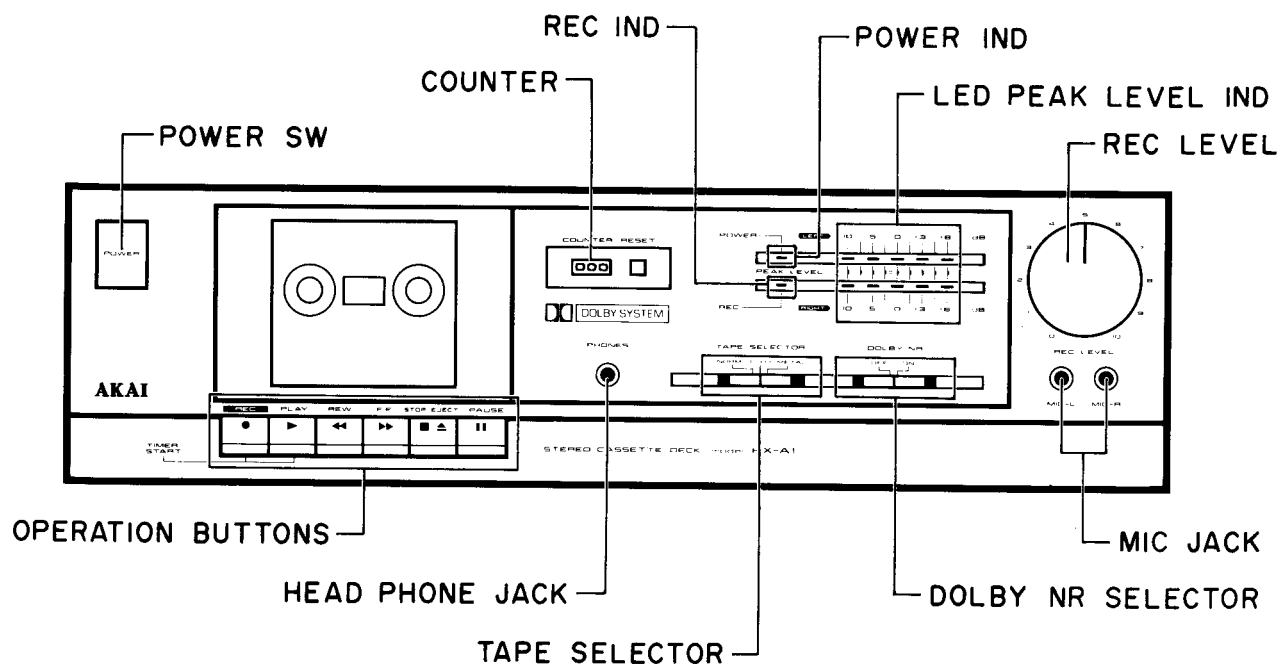


Fig. 3-1

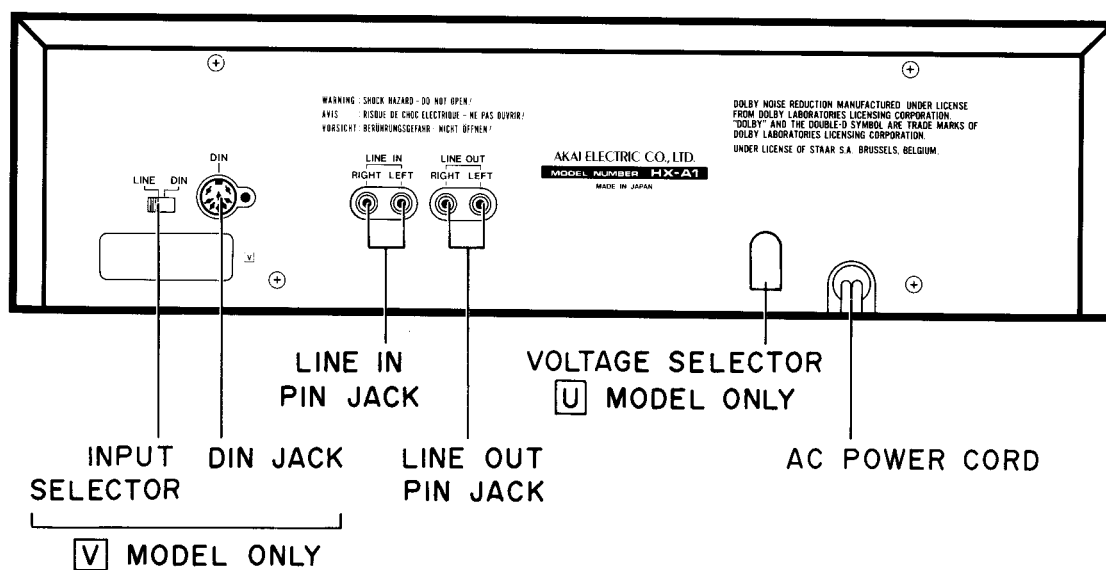


Fig. 3-2

## IV. PRINCIPAL PARTS LOCATION

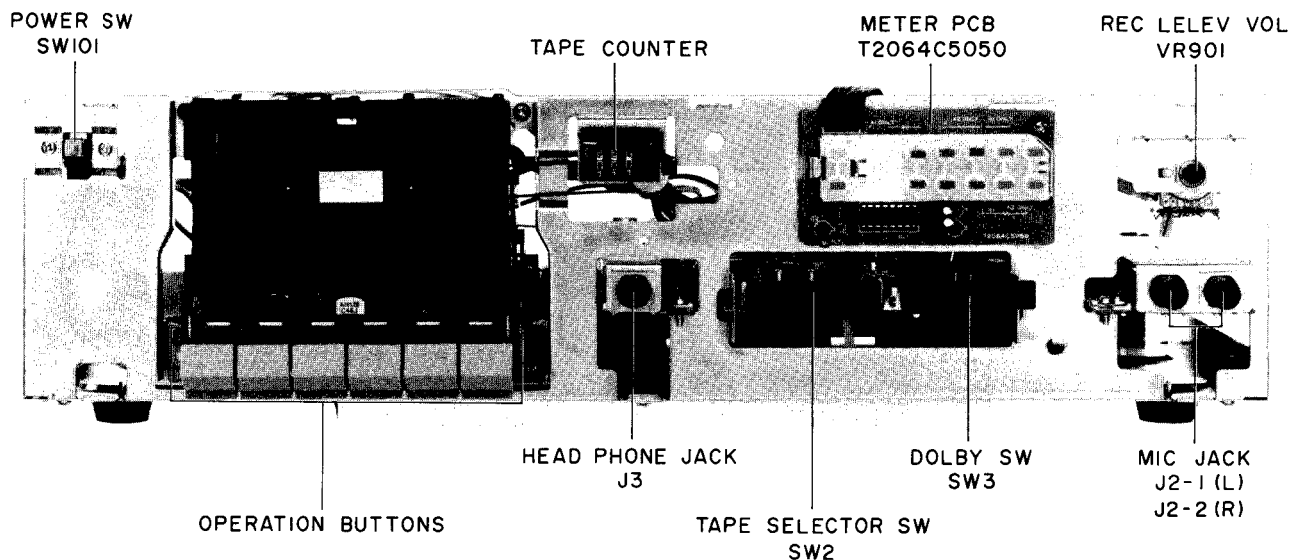


Fig. 4-1 Front View

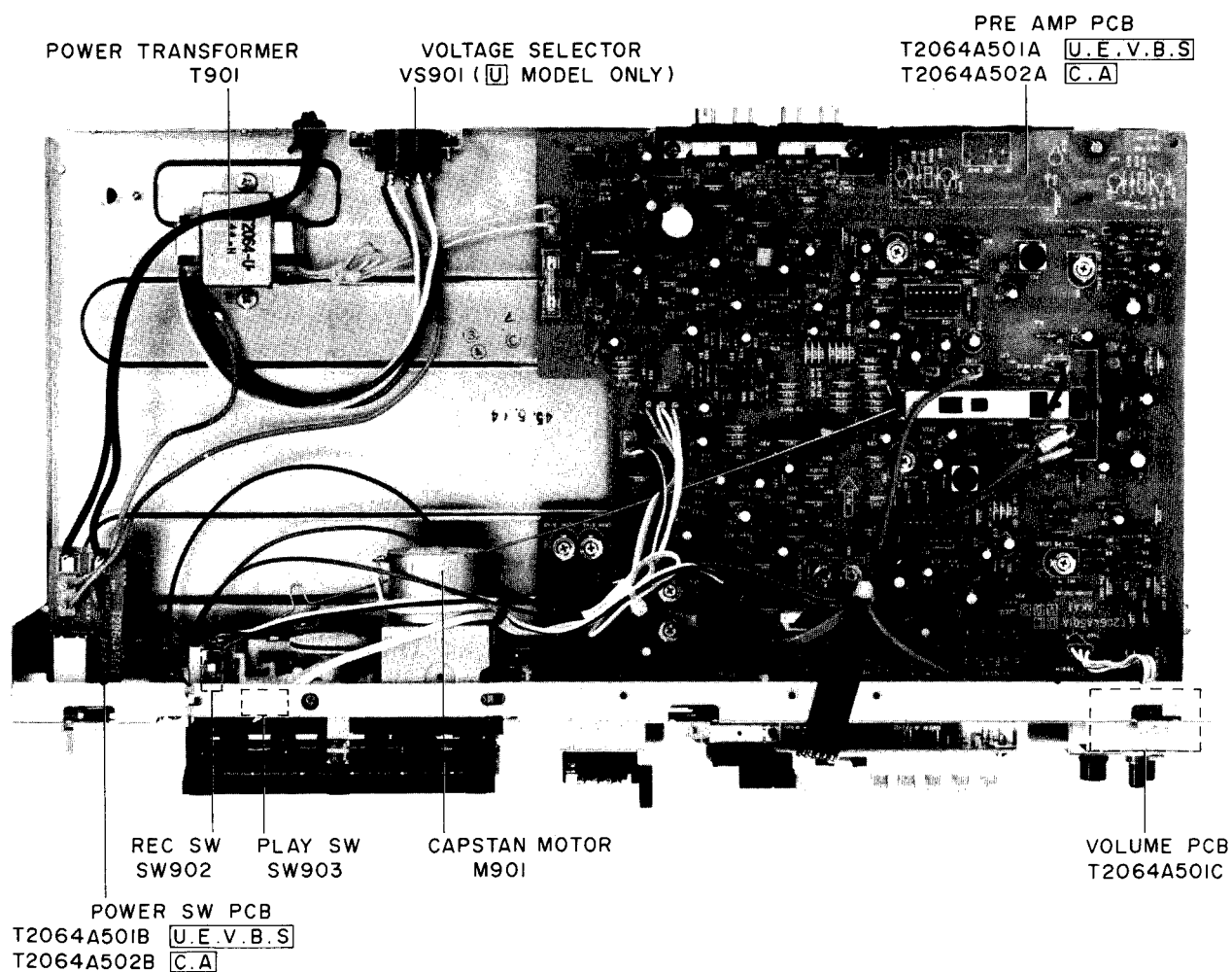


Fig. 4-2 Top View

## V. MECHANICAL ADJUSTMENT

### 5-1 PINCH ROLLER PRESSURE MEASUREMENT (Refer to Fig. 5-1)

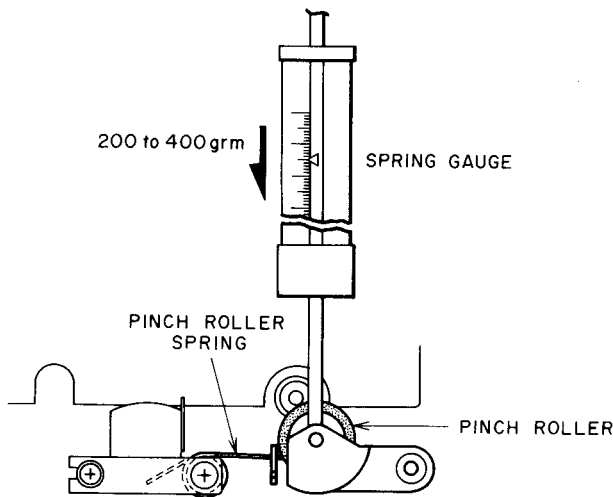


Fig. 5-1

Put in PLAY mode. Push pinch roller arm down with the spring gauge, push the pinch roller 1 to 2 mm from the Capstan and release slowly. Read the spring gauge at the moment the pinch roller touches the capstan and begins to rotate. Specified contact pressure measurement of 200 to 400 gm. If there is no measurement obtained, Adjust or Replace the pinch roller spring.

### 5-2 WINDING TORQUE MEASUREMENT IN EACH MODE (Refer to Fig. 5-2)

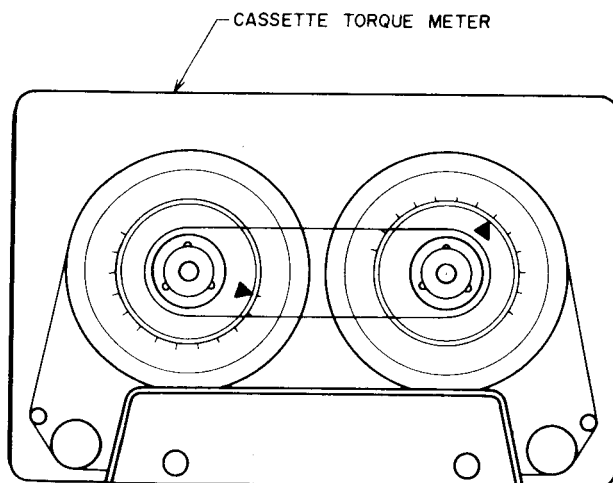


Fig. 5-2

Insert a cassette torque meter (AJ-751179) and measure in each mode. For Fast Forward and Rewind, measure at the end of the tape when the tape has stopped running.

#### PLAY mode

Take up Torque: 35 to 75 gm-cm

Back tension torque: 1 to 6 gm-cm

#### FAST FORWARD, REWIND mode

Take up Torque: 70 to 160 gm-cm

### 5-3 TAPE SPEED ADJUSTMENT (Refer to Fig. 5-3)

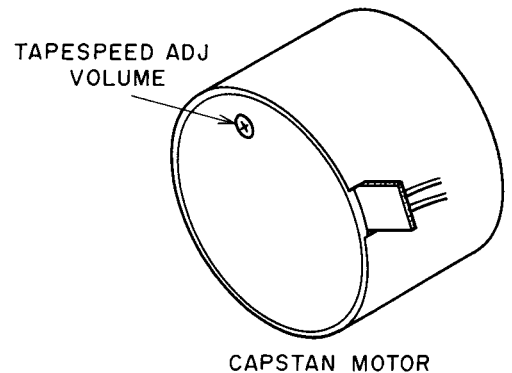


Fig. 5-3

Connect a frequency Counter to Line output terminals. Play Back a 1,000Hz Tape Speed Test Tape (AT-750774) or 3,150Hz Tape Speed Test Tape (AT-750774) and adjust a Tape Speed Adjustment Volume (see Fig. 3-3) to obtain a tape speed of 1,000Hz  $\pm$  10Hz, or 3,150  $\pm$  30Hz.

### 5-4 REC/RB HEAD AZIMUTH ADJUSTMENT (Refer to Fig. 5-4)

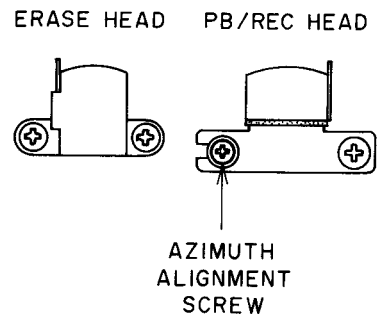


Fig. 5-4

Play Back a 10kHz Azimuth Alignment Tape (AT-750778) and Adjust the Azimuth Alignment Screw, until the output levels of both channels are maximum. After Adjustment, Paintlock the Azimuth Alignment Screw.

---

## 5-5 JOINT REC ADJUSTMENT

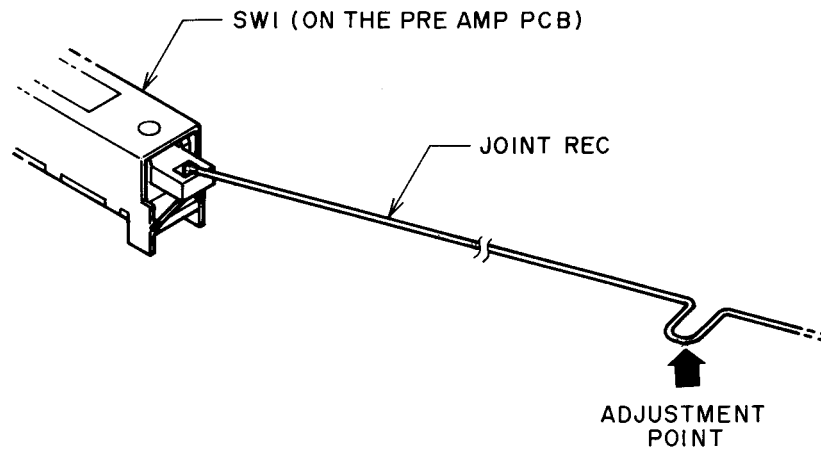


Fig. 5-5

Adjust adjustment point of JOINT REC so that SW1 is pulled completely at REC mode, it is released at PB mode.

## VI. AMPLIFIER ADJUSTMENT

### 6-1 PRE AMP ADJUSTMENT POINT

PRE AMP PCB (T2064A501A to 503A)

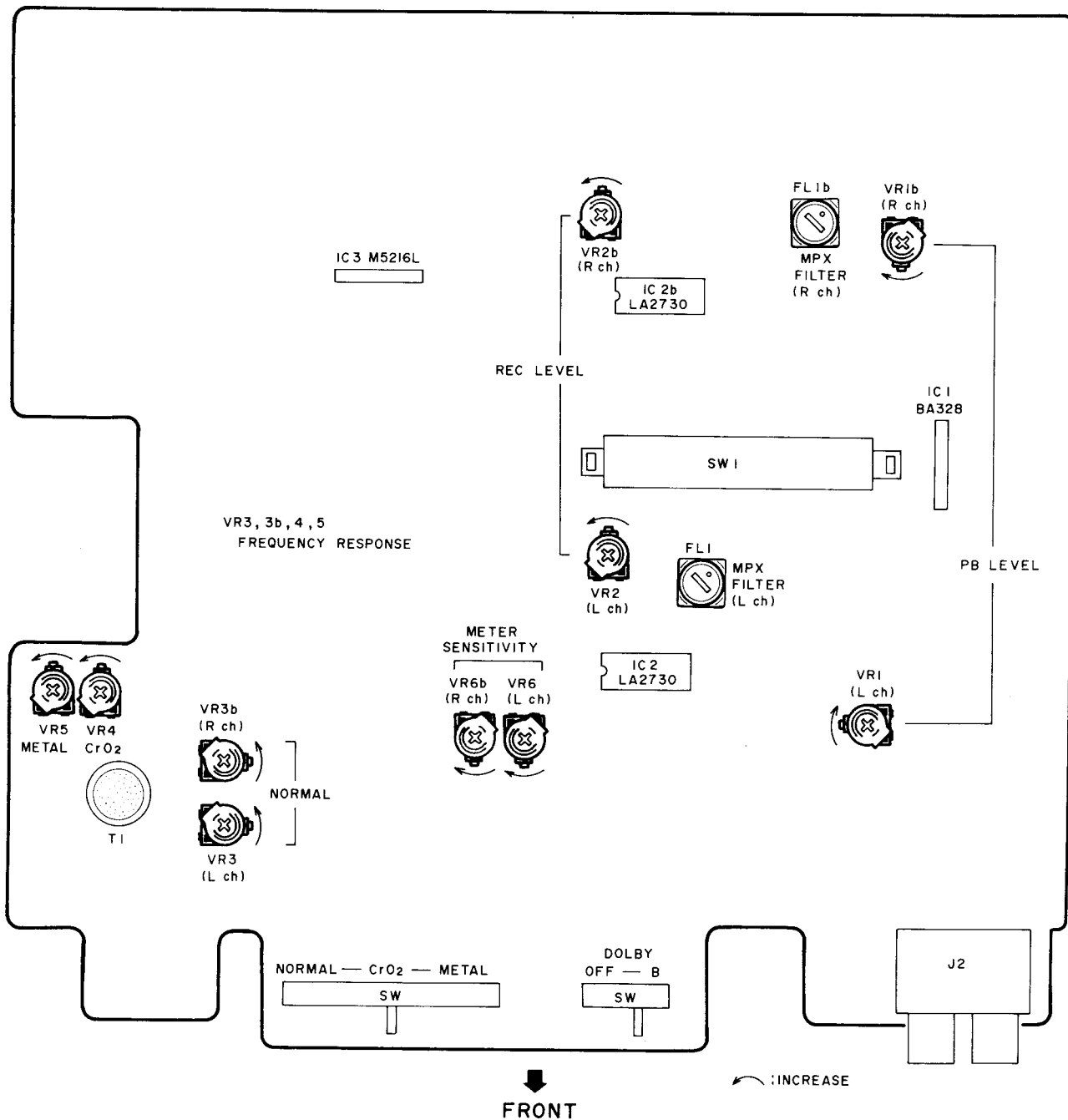


Fig. 6-1

## 6-2 PRE AMP ADJUSTMENT CHART

| Step | Adjustment Item                              | Test Tape Supply signal                                      | Mode   | Adjustment                      | Result                                   | Remarks             |
|------|----------------------------------------------|--------------------------------------------------------------|--------|---------------------------------|------------------------------------------|---------------------|
| 1    | PB LEVEL                                     | 315Hz<br>or<br>333Hz                                         | PB     | VR 1<br>(Lch)<br>VR 1b<br>(Rch) | $-6.1 \pm 0.5$ dBm<br>$-6.6 \pm 0.5$ dBm |                     |
| 2    | NORMAL POSITION FREQUENCY RESPONSE           | NORMAL<br>Blank Tape<br>1kHz, 10kHz<br>$-26.0$ dBm           | REC/PB | VR 3<br>(Lch)<br>VR 3b<br>(Rch) | 1kHz, 10kHz<br>Flat<br>$\pm 0.3$ dBm     |                     |
| 3    | CrO <sub>2</sub> POSITION FREQUENCY RESPONSE | CrO <sub>2</sub><br>Blank Tape<br>1kHz, 10kHz<br>$-26.0$ dBm | REC/PB | VR 4                            | 1kHz, 10kHz<br>Flat<br>$\pm 0.8$ dBm     |                     |
| 4    | METAL POSITION FREQUENCY RESPONSE            | METAL<br>Blank Tape<br>1kHz, 10kHz<br>$-26.0$ dBm            | REC/PB | VR5                             | 1kHz, 10kHz<br>Flat<br>$\pm 0.8$ dBm     |                     |
| 5    | REC LEVEL                                    | NORMAL<br>Blank Tape<br>1kHz,<br>$-6.0$ dBm                  | REC/PB | VR 2<br>(Lch)<br>VR 2b<br>(Rch) | $-6.0 \pm 0.5$ dBm                       |                     |
| 6    | METER SENSITIVITY                            | 1kHz, $-2$ dBm<br>(606mV)                                    | REC    | VR 6<br>(Lch)<br>VR 1b<br>(Rch) | OVU LED<br>BRIGHTLY                      | OVU = 606mV         |
| 7    | MPX Filter                                   | 19kHz                                                        | REC    | FL 1<br>(Lch)<br>FL 1b<br>(Rch) | OUTPUT<br>Minimum                        | Less than $-30$ dBm |

- NOTES:**
1. All adjustments are without Dolby.
  2. Use the following cassette measuring tapes:  
 NORMAL TAPE : Maxell UDI C-60  
 CrO<sub>2</sub> TAPE : TDK SA C-60  
 METAL TAPE : TDK MA C-60
  3. Refer to Fig. 6-1 for the adjustments.

## VII. DC RESISTANCE OF HEADS

---

| Description | Name        | DC Resistance      |
|-------------|-------------|--------------------|
| PB/REC Head | HY4247199VK | 320 ohms $\pm$ 20% |
| Erase Head  | HJ213270    | 3.5 ohms           |

## VIII. PC BOARD TITLES AND IDENTIFICATION NUMBERS

---

| PC Board Title    | PC Board Number | Remarks       |
|-------------------|-----------------|---------------|
| PRE AMP PC BOARD  | T2064A501A      | U, E, V, B, S |
|                   | T2064A502A      | C, A          |
| METER PC BOARD    | T2064C5050      |               |
| POWER SW PC BOARD | T2064C501B      | U, E, V, B, S |
|                   | T2064C502B      | C, A          |
| VOLUME PC BOARD   | T2064A501C      |               |

---

## SECTION 2

# PARTS LIST

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| 3. METER PC BOARD BLOCK .....   | 17 |
| 4. ASSEMBLY BLOCK .....         | 18 |
| 5. FINAL ASSEMBLY BLOCK .....   | 19 |
| INDEX .....                     | 20 |

Resistors and Capacitors which are not listed in this parts list, please refer to COMMON LIST FOR SERVICE PARTS.

## ATTENTION

1. When placing an order for parts, be sure to list the parts no., model no., and description. There are instances in which if any of this information is omitted, parts cannot be shipped or the wrong parts will be delivered.
2. Please be careful not to make a mistake in the parts no. If the parts no. is in error, a part different from the one ordered may be delivered.
3. Because parts number and parts unit supply in the Preliminary Parts List may be partially changed, please use this parts list for all future reference.

## HOW TO USE THIS PARTS LIST

1. This Parts List shows the parts that are considered necessary for repairs. Other parts, such as resistors and capacitors, are shown in the "Common List for Service Parts". Select and order such parts from the "Common List for Service Parts".
2. The Recommended Spare Parts shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not be supplied in principle.
4. How to read list

a) Mechanism Block

b) P.C Board Block

### 2. HEAD BASE BLOCK

| REF. NO. | PARTS NO.     | DESCRIPTION             |
|----------|---------------|-------------------------|
| 2-1x     | BH-T2023A320A | HEAD BASE BLOCK GX-F66R |
| 2-2      | HP-H2206A010A | HEAD R/P PR4-8FU C      |
| 2-3      | ZS-477876     | PAN20x03STL CMT         |
| 2-4      | ZS-536488     | BID20x08STL CMT         |
| 2-5      | ZG-402895     | CS ANGLE ADJUST SPRING  |

SP (Service Parts) Classification

A small "x" indicates the inability to show that particular part in the Photo or Illustration.

This number corresponds with the individual parts index number in that figure

This number corresponds with the Figure Number

### 6. SYS. CON. P.C BOARD BLOCK

| REF. NO.  | PARTS NO.     | DESCRIPTION                     |
|-----------|---------------|---------------------------------|
| 6-1       | BA-T2034A070A | PC SYS CON BLK GX-F44R          |
| 6-IC1     | EI-324536     | IC HD14049BP                    |
| 6-IC2     | EI-336801     | IC MB8841-564M                  |
| 6-IC3     | EI-331661     | IC SN7405N                      |
| 6-IC4     | EI-336725     | IC M54527P                      |
| 6-TR1to4  | ET-200985     | TR 2SC2603 F,G                  |
| 6-TR5to28 | ET-554657     | TR 2SA733A P,Q                  |
| 6-D1      | ED-318292     | D SILICON H 1S2473T-77 T26      |
| 6-D2to4   | ED-308952     | D GERMA V 1K34A-LR F07          |
| 6-D5to10  | ED-318292     | D SILICON H 1S2473T-77 T26      |
| 6-X1      | EI-318384     | OSC X'TAL NC-18C<br>3.579545MHZ |

SP (Service Parts) Classification

This reference numbers corresponds with symbol numbers of Schematic Diagrams.

5. Both the kind of part and installation position can be determined by the Parts Number. To determine where a parts number is listed, utilize Parts Index at end of Parts List. It is necessary first of all to find the Parts Number. This can be accomplished by using the Reference Number listed at right of parts number in the Parts Index.

## WARNING

⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

## AVERTISSEMENT

⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SURETE. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT.

RECOMMENDED SPARE PARTS

Because, if the parts listed below are on hand, almost any repair can be accomplished, we suggest that you stock these Recommended Spare Parts Items.

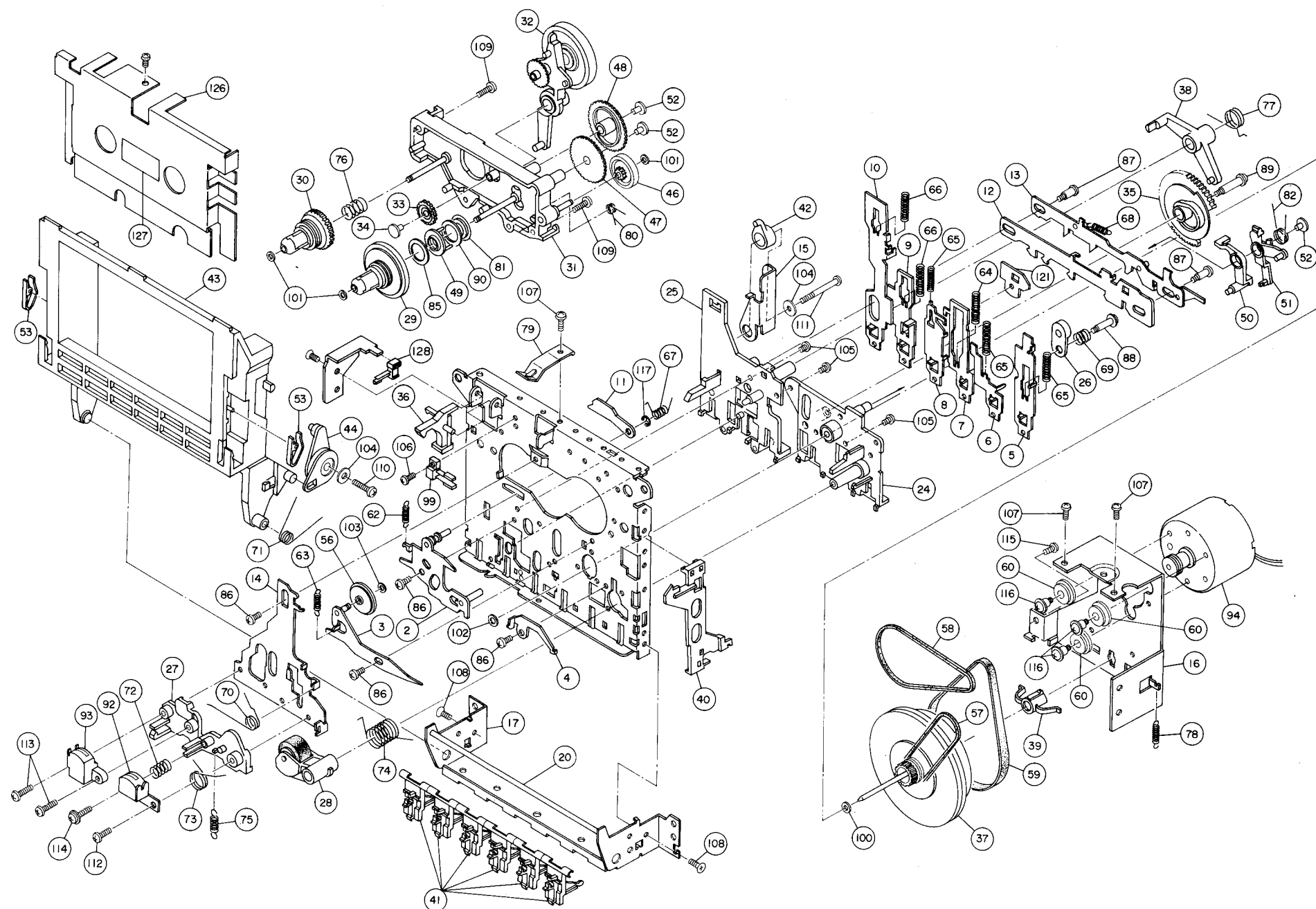
| NO. | PARTS NO.   | DESCRIPTION                               |
|-----|-------------|-------------------------------------------|
| 1   | BL-712799   | PINCH ROLLER ARM ASSY                     |
| 2   | BM-712825   | Δ MOTOR (W/PULLEY) ASSY                   |
| 3   | BR-712802   | SUPPLY REEL ASSY                          |
| 4   | BR-712801   | TAKE-UP REEL ASSY                         |
| 5   | BT-354051   | Δ TRANS POWER T2064 (A,C)                 |
| 6   | BT-354053   | Δ TRANS POWER T2064 (B,S)                 |
| 7   | BT-354052   | Δ TRANS POWER T2064 (E,V,Y1)              |
| 8   | BT-354050   | Δ TRANS POWER T2064 (U)                   |
| 9   | ED-353292   | D LED GL-9HY24 YELLOW                     |
| 10  | ED-353290   | D LED GL-9NG24 GREEN                      |
| 11  | ED-353291   | D LED GL-9PR24 RED                        |
| 12  | ED-330319   | D SILICON DBA10B 100/1.0A                 |
| 13  | ED-301911   | D SILICON H DS448                         |
| 14  | N ED-338403 | D ZENER V HZ11B-1S7                       |
| 15  | ED-348001   | D ZENER V HZ2B-1S7                        |
| 16  | EF-258344   | Δ FUSE SEMKO T 250V 0.80A<br>(EXCEPT C,A) |
| 17  | EF-309391   | Δ FUSE TSC 125V 0.80A (C,A)               |
| 18  | EH-354528   | FILTER DOLBY FX-100B                      |
| 19  | EI-349590   | IC BA3280EC                               |
| 20  | EI-353289   | IC IR2E27A                                |
| 21  | EI-349591   | IC LA2730                                 |
| 22  | EI-353227   | IC M5216L                                 |
| 23  | ES-337902   | Δ SW PUSH SDLD1P 01-1                     |
| 24  | ES-305733   | Δ SW SELECTOR HXW0131-260 01-4<br>(U)     |
| 25  | ES-713178   | SW LSA-1120-YN                            |
| 26  | ES-713179   | SW LSA-1123-37                            |
| 27  | ES-353296   | SW SLIDE SSY322                           |
| 28  | ES-353295   | SW SLIDE SSY363                           |
| 29  | ES-353294   | SW SLIDE 01420061                         |
| 30  | ET-322598   | TR 2SB632K E,F                            |
| 31  | ET-348931   | TR 2SB774 R,S,T                           |
| 32  | ET-331279   | TR 2SC1843 P,F SNP                        |
| 33  | N ET-309353 | TR 2SC2274K E,F                           |
| 34  | ET-328578   | TR 2SC2320 E,F                            |
| 35  | ET-351872   | TR 2SC3383 R,S                            |
| 36  | ET-349081   | TR 2SC3383 S,T                            |
| 37  | ET-351123   | TR 2SC3383 T                              |
| 38  | N ET-452531 | TR 2SD313HP E,F                           |
| 39  | EV-344109   | R S-FIX H RVF8P01 3P 102                  |
| 40  | EV-337995   | R S-FIX H RVF8P01 3P 103                  |
| 41  | EV-337993   | R S-FIX H RVF8P01 3P 203                  |
| 42  | EV-337992   | R S-FIX H RVF8P01 3P 502                  |
| 43  | EV-338588   | R S-FIX H RVF8P01 3P 503                  |
| 44  | EV-348314   | VR ROTARY 16P20×3C A503                   |
| 45  | HE-337047   | HEAD E HJ213270 C                         |
| 46  | HP-712824   | HEAD R/P HY424528 SVK                     |
| 47  | MB-712818   | BELT AUTO                                 |
| 48  | MB-712820   | BELT DRIVE                                |
| 49  | MB-712819   | BELT FR                                   |
| 50  | MB-351605   | BELT 0.8×D593 CRHS65                      |
| 51  | MC-353312   | COUNTER MK395-043 (BLACK)                 |
| 52  | MI-712813   | GEAR AUTO                                 |
| 53  | MI-711710   | GEAR C                                    |
| 54  | MI-712814   | GEAR CAM AUTO                             |
| 55  | MI-712804   | GEAR FF                                   |

“NOTE” N : New Parts

SYMBOL FOR DESTINATION

- A : AAL (U.S.A)
- B : UK (England)
- C : CSA (Canada)
- E : CEE (Europe)
- S : SAA (Australia)
- U : U/T (Universal Area)
- V : VDE (West Germany)

# MECHA AKI-90FMF BLOCK



## 1. MECHA AKI-90FMF BLOCK

| REF. NO. | PARTS NO. | DESCRIPTION           |
|----------|-----------|-----------------------|
| 1-1      | BB-349568 | MECHA BLK AKI-90FMF   |
| 1-24     | MV-712797 | HOLDER LEVER (A) ASSY |
| 1-28     | BL-712799 | PINCH ROLLER ARM ASSY |
| 1-29     | BR-712801 | TAKE-UP REEL ASSY     |
| 1-30     | BR-712802 | SUPPLY REEL ASSY      |
| 1-32     | MI-712803 | CLUTCH ARM ASSY       |
| 1-33     | MI-712804 | GEAR FF               |
| 1-35     | MI-711710 | GEAR C                |
| 1-36     | ML-712806 | REC SENSOR            |
| 1-37     | BF-712807 | FLYWHEEL ASSY         |
| 1-39     | MZ-712808 | HOLDER CAPSTAN        |
| 1-40     | ML-712809 | LEVER EJECT           |
| 1-43     | TC-712810 | LID FRAME             |
| 1-44     | TC-712811 | DAMPER ASSY           |

| REF. NO. | PARTS NO. | DESCRIPTION           |
|----------|-----------|-----------------------|
| 1-46     | MI-712812 | PULLEY AUTO           |
| 1-47     | MI-712813 | GEAR AUTO             |
| 1-48     | MI-712814 | GEAR CAM AUTO         |
| 1-49     | MI-712815 | CLUTCH AUTO           |
| 1-53     | ZG-712816 | CLAMP CASSETTE        |
| 1-56     | MI-712817 | IDLER PLAY            |
| 1-57     | MB-712818 | BELT AUTO             |
| 1-58     | MB-712819 | BELT FR               |
| 1-59     | MB-712820 | BELT DRIVE            |
| 1-72     | ZG-749268 | SP HEAD               |
| 1-73     | ZG-712821 | SP PINCH ROLLER       |
| 1-79     | ZG-712822 | SP PACK               |
| 1-85     | TC-712823 | FELT AUTO CLUTCH      |
| 1-92     | HP-712824 | HEAD R/P HY424528 SVK |

| REF. NO. | PARTS NO. | DESCRIPTION             |
|----------|-----------|-------------------------|
| 1-93     | HE-337047 | HEAD E HJ213270 C       |
| 1-94     | BM-712825 | Δ MOTOR (W/PULLEY) ASSY |
| 1-99     | ES-713178 | SW LSA-1120-YN (SW903)  |
| 1-112    | ZS-536488 | BID20×08STL CMT         |
| 1-113    | ZS-749292 | BID20×8.5STL CMT        |
| 1-114    | ZS-749293 | BID20×09STL CMT TW      |
| 1-126    | TC-349493 | DECORATION PLATE        |
| 1-127    | SZ-645186 | REFLECTOR               |
| 1-128    | ES-713179 | SW LSA-1123-37 (SW902)  |

NOTE: Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

## 2. PRE AMP PC BOARD BLOCK

| REF. NO. | PARTS NO.     | Description                 |
|----------|---------------|-----------------------------|
| 2-1U     | BA-T2064A020A | PC PRE AMP BLK HX-A1(U)     |
| 2-1C     | BA-T2064A020B | PC PRE AMP BLK HX-A1(C,A)   |
| 2-1E     | BA-T2064A020D | PC PRE AMP BLK HX-A1(E,B,S) |
| 2-1G     | BA-T2064A020C | PC PRE AMP BLK HX-A1(V)     |

### PRE AMP PC BOARD

|           |           |                               |
|-----------|-----------|-------------------------------|
| 2-IC1     | EI-349590 | IC BA3280EC                   |
| 2-IC2     | EI-349591 | IC LA2730                     |
| 2-IC3     | EI-353227 | IC M5216L                     |
| 2-TR1to3  | ET-349081 | TR 2SC3383 S,T                |
| 2-TR4     | ET-309353 | TR 2SC2274K E,F               |
| 2-TR5     | ET-309353 | TR 2SC2274K E,F               |
| 2-TR6     | ET-452531 | Δ TR 2SD313HP E,F             |
| 2-TR7to10 | ET-328578 | TR 2SC2320 E,F                |
| 2-TR11    | ET-348931 | TR 2SB774 R,S,T               |
| 2-TR12,13 | ET-351872 | TR 2SC3383 R,S                |
| 2-TR100   | ET-322598 | Δ TR 2SB632K E,F              |
| 2-TR101   | ET-351123 | Δ TR 2SC3383 T                |
| 2-TR110   | ET-331279 | TR 2SC1843 P,F SNP (V,Y1)     |
| 2-D1,3    | ED-301911 | D SILICON H DS448             |
| 2-D4to6   | ED-301911 | D SILICON H DS448             |
| 2-D7      | ED-348001 | D ZENER V HZ2B-1S7            |
| 2-D100    | ED-330319 | Δ D SILICON DBA10B 100/1.0A   |
| 2-D101    | ED-338403 | D ZENER V HZ11B-1S7           |
| 2-SW1     | ES-353294 | SW SLIDE 01420061             |
| 2-SW2     | ES-353295 | SW SLIDE SSY363               |
| 2-SW3     | ES-353296 | SW SLIDE SSY322               |
| 2-VR1     | EV-338588 | R S-FIX H RVF8P01 3P 503      |
| 2-VR2     | EV-337992 | R S-FIX H RVF8P01 3P 502      |
| 2-VR3     | EV-338588 | R S-FIX H RVF8P01 3P 503      |
| 2-VR4     | EV-337993 | R S-FIX H RVF8P01 3P 203      |
| 2-VR5     | EV-344109 | R S-FIX H RVF8P01 3P 102      |
| 2-VR6     | EV-337995 | R S-FIX H RVF8P01 3P 103      |
| 2-L1      | EO-347162 | COIL FIX 1 L-8 103J           |
| 2-FL1     | EH-354528 | FILTER DOLBY FX-100B          |
| 2-FL2     | EO-315758 | COIL TUN 1 100Z-431 100.00KHZ |
| 2-T1      | EO-349589 | COIL OSC 1 32-5016-12         |
| 2-R11     | ER-324185 | R CB H S10 FS RDS 1/4W 221J   |
| 2-R98     | ER-353794 | R OMF H SNP FS 2W 560J        |
| 2-R99     | ER-324185 | R CB H S10 FS RDS 1/4W 221J   |
| 2-R100    | ER-324186 | R CB H S10 FS RDS 1/4W 681J   |
| 2-C1      | EC-312012 | C STY V F05 CQF09 561J 50DC   |
| 2-C3      | EC-306017 | C STY V F05 CQ09S 221J 50DC   |
| 2-C14     | EC-314990 | C STY V SNP CQFS 101J 50DC    |
| 2-C42     | EC-334418 | C STY V F05 500 122J 50DC     |
| 2-C43     | EC-347263 | C MC V F05 FM 221J 500DC      |
| 2-C55     | EC-349631 | C PP V F10 ECQ-F 182J 630DC   |
| 2-J1      | EJ-347664 | PIN J YKC21-5053 P 4P         |
| 2-J2      | EJ-347631 | PHONE J HLJ0527-3034          |
| 2-J3      | EJ-343380 | PHONE J 3P HLJ0541-040 6.3    |
| 2-J5      | EJ-698051 | DIN J CS707-1-1 P 5P (V,Y1)   |

### VOLUME PC BOARD

|         |           |                         |
|---------|-----------|-------------------------|
| 2-VR901 | EV-348314 | VR ROTARY 16P20x3C A503 |
|---------|-----------|-------------------------|

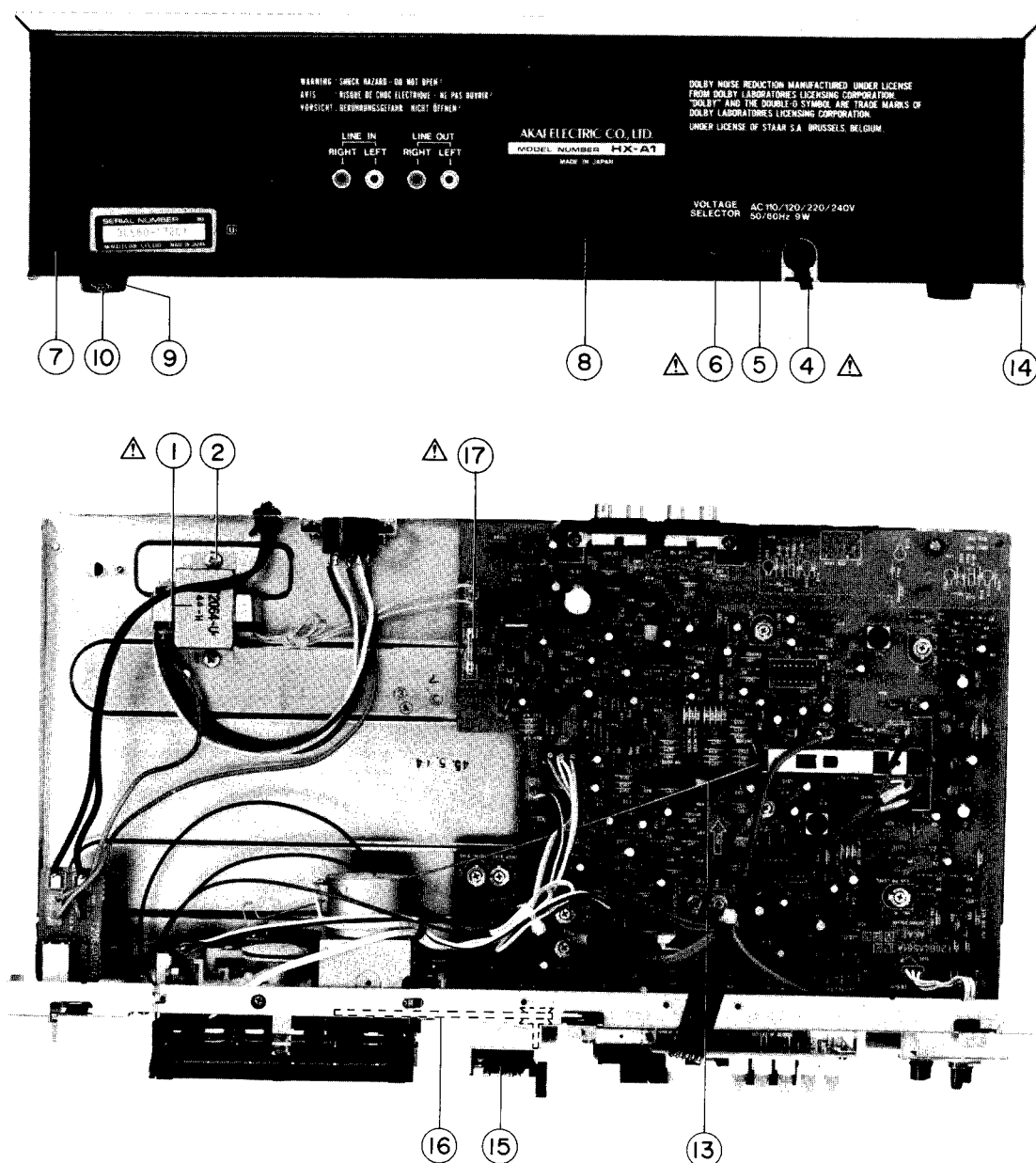
### POWER SW PC BOARD

|         |           |                                 |
|---------|-----------|---------------------------------|
| 2-SW901 | ES-337902 | Δ SW PUSH SDLD1P 01-1           |
| 2-C901U | EC-320548 | Δ C CE V F 103Z 250AC (U,C,A)   |
| 2-C901E | EC-338411 | Δ C CE V FZ 103P 400AC(E,B,S,G) |

## 3. METER PC BOARD BLOCK

| REF. NO. | PARTS NO. | DESCRIPTION           |
|----------|-----------|-----------------------|
| 3-IC1    | EI-353289 | IC IR2E27A            |
| 3-D1to3  | ED-353290 | D LED GL-9NG24 GREEN  |
| 3-D4to6  | ED-353291 | D LED GL-9PR24 RED    |
| 3-D7     | ED-353292 | D LED GL-9HY24 YELLOW |

## ASSEMBLY BLOCK

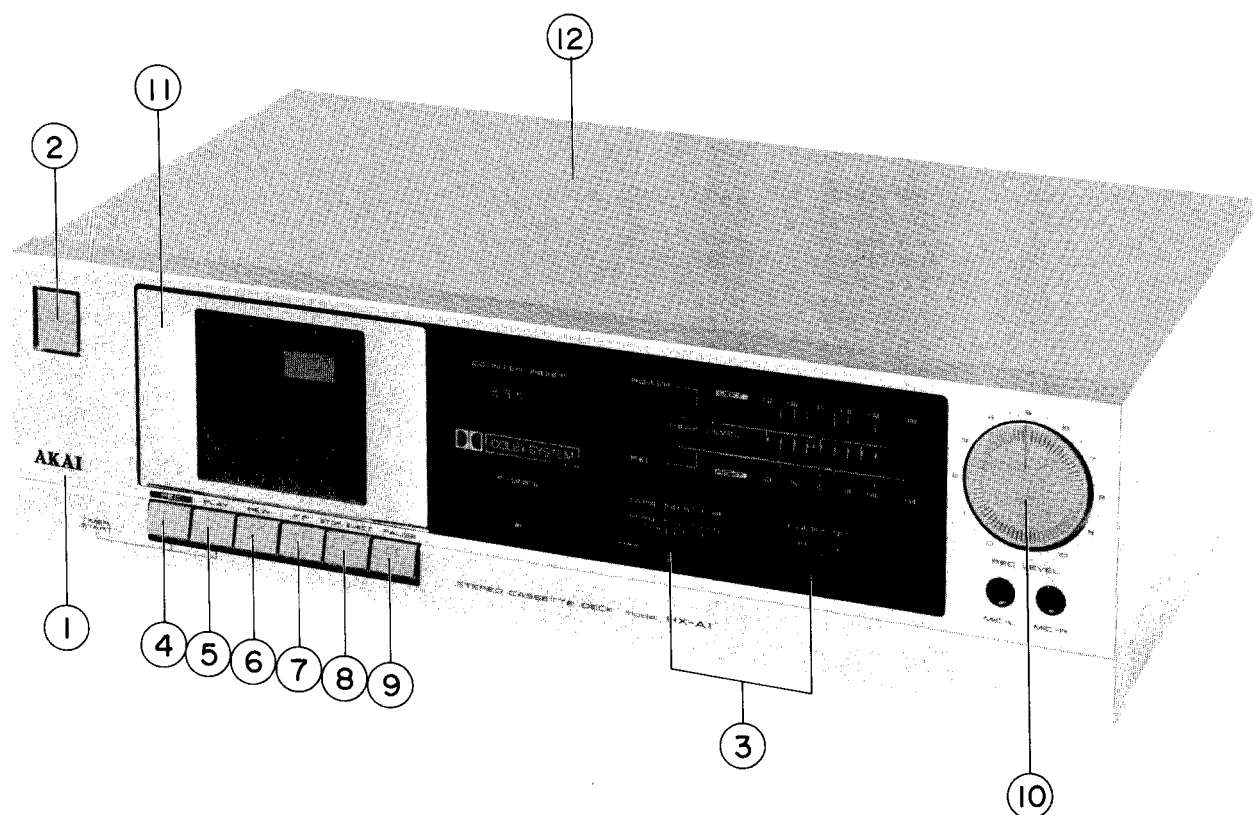


### 4. ASSEMBLY BLOCK

| REF. NO. | PARTS NO. | DESCRIPTION                                    | REF. NO. | PARTS NO.  | DESCRIPTION                              |
|----------|-----------|------------------------------------------------|----------|------------|------------------------------------------|
| 4-1U     | BT-354050 | △ TRANS POWER T2064(U)                         | 4-7      | ZS-352120  | T2BR30x08STL BCM C080 (U)                |
| 4-1C     | BT-354051 | △ TRANS POWER T2064(A,C)                       | 4-8U     | SP-351610A | PANEL REAR HX-A1 (U)                     |
| 4-1E     | BT-354052 | △ TRANS POWER T2064(E,V,Y1)                    | 4-8C     | SP-351610B | PANEL REAR HX-A1 (C,A)                   |
| 4-1B     | BT-354053 | △ TRAN SPOWER T2064(B,S)                       | 4-8E     | SP-351610C | PANEL REAR HX-A1 (E)                     |
| 4-2      | ZS-313796 | ST BID40x06STL CMT                             | 4-8V     | SP-351610D | PANEL REAR HX-A1-G (V,Y1)                |
| 4-3x     | ZW-273914 | SW40                                           | 4-8B     | SP-351610E | PANEL REAR HX-A1 (B,S)                   |
| 4-4U     | EW-306428 | △ AC CORD 1 CORES KP-700A, VFF U/T (U)         | 4-9      | SA-202118  | FOOT                                     |
| 4-4C     | EW-305691 | △ AC CORD 2 CORES KP-8, SPT-1 UC (C,A)         | 4-10     | ZS-331567  | T2BR30x08STL CMT C080                    |
| 4-4E     | EW-336923 | △ AC CORD 2 CORES KP-419C, LTCE-2F EV (E,V,Y1) | 4-11x    | ZW-698308  | RV NYL30x055 BL (V,Y1)                   |
| 4-4B     | EW-346249 | △ AC CORD 2 CORES LCFL2x0.75 B (B)             | 4-12x    | ZW-305013  | RV POP32 (A)                             |
| 4-4S     | EW-347898 | △ AC CORD 2 CORES VM-0436, LCFL S (S)          | 4-13     | MZ-353159A | JOINT REC (A)                            |
| 4-5      | EZ-631945 | STRAIN RELIEF SR-4N-4                          | 4-14     | ZS-353319  | T2BR 30x06STL BCM                        |
| 4-6      | ES-305733 | △ SW SELECTOR HXW0131-260 01-4 (U)             | 4-15     | MC-353312  | COUNTER MK395-043 (BLACK)                |
|          |           |                                                | 4-16     | MB-351605  | BELT 0.8xD593 CRHS65                     |
|          |           |                                                | 4-17U    | EF-258344  | △ FUSE SEMKO T 250V 0.80A (U,E,V,B,S,Y1) |
|          |           |                                                | 4-17C    | EF-309391  | △ FUSE TSC 125V 0.80A (C,A)              |

PARTS LIST HX-A1

## FINAL ASSEMBLY BLOCK



### 5. FINAL ASSEMBLY BLOCK

| REF. NO. | PARTS NO.  | DESCRIPTION                        |
|----------|------------|------------------------------------|
| 5-1      | BD-351609A | PANEL FRONT HX-A1                  |
| 5-1P     | BD-351609B | PANEL FRONT HX-A1-P<br>(EXCEPT Y1) |
| 5-2      | SK-343017C | KNOB POWER (2)                     |
| 5-2P     | SK-343017B | KNOB POWER-P                       |
| 5-3      | SK-351613A | KNOB SLIDE                         |
| 5-4      | SK-349496G | KNOB OPERATION (B) REC             |
| 5-4P     | SK-349496N | KNOB OPERATION (C) REC             |
| 5-5      | SK-349496H | KNOB OPERATION (B) PLAY            |
| 5-5P     | SK-349496P | KNOB OPERATION (C) PLAY            |
| 5-6      | SK-349496J | KNOB OPERATION (B) REW             |
| 5-6P     | SK-349496Q | KNOB OPERATION (C) REW             |
| 5-7      | SK-349496K | KNOB OPERATION (B) FF              |
| 5-7P     | SK-349496R | KNOB OPERATION (C) FF              |
| 5-8      | SK-349496L | KNOB OPERATION (B) STOP            |
| 5-8P     | SK-349496S | KNOB OPERATION (C) STOP            |
| 5-9      | SK-349496M | KNOB OPERATION (B) PAUSE           |
| 5-9P     | SK-349496T | KNOB OPERATION (C) PAUSE           |
| 5-10     | SK-345375H | KNOB VOLUME (F)                    |
| 5-10P    | SK-345375J | KNOB VOLUME (G)                    |
| 5-11     | BD-351612A | LID                                |
| 5-11P    | BD-351612B | LID-P                              |
| 5-12     | SP-351611A | COVER UPPER                        |
| 5-12P    | SP-351611B | COVER UPPER-P                      |

# INDEX

| PARTS NO.     | REF. NO. | PARTS NO.  | REF. NO. | PARTS NO. | REF. NO. | PARTS NO. | REF. NO. |
|---------------|----------|------------|----------|-----------|----------|-----------|----------|
| BA-T2064A020A | 2-1U     | ET-351872  | 2-TR12   |           |          |           |          |
| BA-T2064A020B | 2-1C     | ET-452531  | 2-TR6    |           |          |           |          |
| BA-T2064A020C | 2-1G     | EV-337992  | 2-VR2    |           |          |           |          |
| BA-T2064A020D | 2-1E     | EV-337993  | 2-VR4    |           |          |           |          |
| BB-349568     | 1-1      | EV-337995  | 2-VR6    |           |          |           |          |
| BD-351609A    | 5-1      | EV-338588  | 2-VR1    |           |          |           |          |
| BD-351609B    | 5-1P     | EV-338588  | 2-VR3    |           |          |           |          |
| BD-351612A    | 5-11     | EV-344109  | 2-VR5    |           |          |           |          |
| BD-351612B    | 5-11P    | EV-348314  | 2-VR901  |           |          |           |          |
| BF-712807     | 1-37     | EW-305691  | 4-4C     |           |          |           |          |
| BL-712799     | 1-28     | EW-306428  | 4-4U     |           |          |           |          |
| BM-712825     | 1-94     | EW-336923  | 4-4E     |           |          |           |          |
| BR-712801     | 1-29     | EW-346249  | 4-4B     |           |          |           |          |
| BR-712802     | 1-30     | EW-347898  | 4-4S     |           |          |           |          |
| BT-354050     | 4-1U     | EZ-631945  | 4-5      |           |          |           |          |
| BT-354051     | 4-1C     | HE-337047  | 1-93     |           |          |           |          |
| BT-354052     | 4-1E     | HP-712824  | 1-92     |           |          |           |          |
| BT-354053     | 4-1B     | MB-351605  | 4-16     |           |          |           |          |
| EC-306017     | 2-C3     | MB-712818  | 1-57     |           |          |           |          |
| EC-312012     | 2-C1     | MB-712819  | 1-58     |           |          |           |          |
| EC-314990     | 2-C14    | MB-712820  | 1-59     |           |          |           |          |
| EC-320548     | 2-C901U  | MC-353312  | 4-15     |           |          |           |          |
| EC-334418     | 2-C42    | MI-711710  | 1-35     |           |          |           |          |
| EC-338411     | 2-C901E  | MI-712803  | 1-32     |           |          |           |          |
| EC-347263     | 2-C43    | MI-712804  | 1-33     |           |          |           |          |
| EC-349631     | 2-C55    | MI-712812  | 1-46     |           |          |           |          |
| ED-301911     | 2-D6     | MI-712813  | 1-47     |           |          |           |          |
| ED-301911     | 2-D5     | MI-712814  | 1-48     |           |          |           |          |
| ED-301911     | 2-D1     | MI-712815  | 1-49     |           |          |           |          |
| ED-301911     | 2-D3     | MI-712817  | 1-56     |           |          |           |          |
| ED-301911     | 2-D4     | ML-712806  | 1-36     |           |          |           |          |
| ED-330319     | 2-D100   | ML-712809  | 1-40     |           |          |           |          |
| ED-338403     | 2-D101   | MV-712797  | 1-24     |           |          |           |          |
| ED-348001     | 2-D7     | MZ-353159A | 4-13     |           |          |           |          |
| ED-353290     | 3-D1     | MZ-712808  | 1-39     |           |          |           |          |
| ED-353290     | 3-D2     | SA-202118  | 4-9      |           |          |           |          |
| ED-353290     | 3-D3     | SK-343017B | 5-2P     |           |          |           |          |
| ED-353291     | 3-D5     | SK-343017C | 5-2      |           |          |           |          |
| ED-353291     | 3-D6     | SK-345375H | 5-10     |           |          |           |          |
| ED-353291     | 3-D4     | SK-345375J | 5-10P    |           |          |           |          |
| ED-353292     | 3-D7     | SK-349496G | 5-4      |           |          |           |          |
| EF-258344     | 4-17U    | SK-349496H | 5-5      |           |          |           |          |
| EF-309391     | 4-17C    | SK-349496J | 5-6      |           |          |           |          |
| EH-354528     | 2-FL1    | SK-349496K | 5-7      |           |          |           |          |
| EI-349590     | 2-IC1    | SK-349496L | 5-8      |           |          |           |          |
| EI-349591     | 2-IC2    | SK-349496M | 5-9      |           |          |           |          |
| EI-353227     | 2-IC3    | SK-349496N | 5-4P     |           |          |           |          |
| EI-353289     | 3-IC1    | SK-349496P | 5-5P     |           |          |           |          |
| EJ-343380     | 2-J3     | SK-349496Q | 5-6P     |           |          |           |          |
| EJ-347631     | 2-J2     | SK-349496R | 5-7P     |           |          |           |          |
| EJ-347664     | 2-J1     | SK-349496S | 5-8P     |           |          |           |          |
| EJ-698051     | 2-J5     | SK-349496T | 5-9P     |           |          |           |          |
| EO-315758     | 2-FL2    | SK-351613A | 5-3      |           |          |           |          |
| EO-347162     | 2-L1     | SP-351610A | 4-8U     |           |          |           |          |
| EO-349589     | 2-T1     | SP-351610B | 4-8C     |           |          |           |          |
| ER-324185     | 2-R11    | SP-351610C | 4-8E     |           |          |           |          |
| ER-324185     | 2-R99    | SP-351610D | 4-8V     |           |          |           |          |
| ER-324186     | 2-R100   | SP-351610E | 4-8B     |           |          |           |          |
| ER-353794     | 2-R98    | SP-351611A | 5-12     |           |          |           |          |
| ES-305733     | 4-6      | SP-351611B | 5-12P    |           |          |           |          |
| ES-337902     | 2-SW901  | SZ-645186  | 1-127    |           |          |           |          |
| ES-353294     | 2-SW1    | TC-349493  | 1-126    |           |          |           |          |
| ES-353295     | 2-SW2    | TC-712810  | 1-43     |           |          |           |          |
| ES-353296     | 2-SW3    | TC-712811  | 1-44     |           |          |           |          |
| ES-713178     | 1-99     | TC-712823  | 1-85     |           |          |           |          |
| ES-713179     | 1-128    | ZG-712816  | 1-53     |           |          |           |          |
| ET-309353     | 2-TR4    | ZG-712821  | 1-73     |           |          |           |          |
| ET-309353     | 2-TR5    | ZG-712822  | 1-79     |           |          |           |          |
| ET-322598     | 2-TR100  | ZG-749268  | 1-72     |           |          |           |          |
| ET-328578     | 2-TR7    | ZS-313796  | 4-2      |           |          |           |          |
| ET-328578     | 2-TR8    | ZS-331567  | 4-10     |           |          |           |          |
| ET-328578     | 2-TR9    | ZS-352120  | 4-7      |           |          |           |          |
| ET-328578     | 2-TR10   | ZS-353319  | 4-14     |           |          |           |          |
| ET-331279     | 2-TR110  | ZS-536488  | 1-112    |           |          |           |          |
| ET-348931     | 2-TR11   | ZS-749292  | 1-113    |           |          |           |          |
| ET-349081     | 2-TR1    | ZS-749293  | 1-114    |           |          |           |          |
| ET-349081     | 2-TR2    | ZW-273914  | 4-3x     |           |          |           |          |
| ET-349081     | 2-TR3    | ZW-305013  | 4-12x    |           |          |           |          |
| ET-351123     | 2-TR101  | ZW-698308  | 4-11x    |           |          |           |          |
| ET-351872     | 2-TR13   |            |          |           |          |           |          |

# AKAI

## WERKSTATTHANDBUCH

Da dieses Wartungshandbuch bereits auf Englisch veröffentlicht ist und Einstell- und Zeichnungshinweise auf Deutsch enthält, empfiehlt es sich, diese Ausgabe des Handbuchs zusammen mit der bereits veröffentlichten englischen Ausgabe und den Stromlaufplänen zu verwenden.

### STEREOCASSETTENDECK

### MODEL **HX-A1**

#### I. TECHNISCHE DATEN

##### I. TECHNISCHE DATEN

|                                            |                                                                                                                                                           |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Spursystem .....                           | 4-Spur 2-Kanal Stereo-System                                                                                                                              |
| Cassette .....                             | Philips-Kompaktcassette                                                                                                                                   |
| Motor .....                                | Ein Gleichstrommotor mit elektronischer Drehzahlregelung für den Capstan Antrieb                                                                          |
| Tonköpfe .....                             | Ein hochdichter Aufnahme/Wiedergabe-Kombikopf<br>Ein Löschkopf                                                                                            |
| Spuldauer .....                            | 100Sek. bei Verwendung einer C-60 Cassette                                                                                                                |
| Gleichlaufschwankungen .....               | 0,05% WRMS, WRMS, 0,12% WTD (DIN)                                                                                                                         |
| Klirrfaktor .....                          | 0,7% (Reineisenband)                                                                                                                                      |
| Frequenzgang .....                         | Reineisenband:<br>30Hz bis 17.000Hz $\pm 3$ dB<br>CrO <sub>2</sub> :<br>30Hz bis 16.000Hz $\pm 3$ dB<br>Normal:<br>30Hz bis 15.000Hz $\pm 3$ dB           |
| Signal-/Rauschspannungsabstand ...         | 56dB (Reineisenband)<br>Dolby B ON:<br>Verbessert um 5dB bei 1kHz, 10dB über 5kHz<br>Dolby C ON:<br>Verbessert um 15dB bei 500Hz, 20dB bei 1kHz bis 10kHz |
| Eingangsempfindlichkeit/<br>Impedanz ..... | LINE 70mV/47kOhm<br>DIN 5mV/10kOhm (HX-A2-G Type)<br>MIC 0,25mV/5kOhm                                                                                     |
| Ausgangsempfindlichkeit/<br>Impedanz ..... | LINE 380mV/1kOhm<br>DIN 380mV/1kOhm (HX-A2-G Type)<br>PHONES 0,3mV (bei 8 Ohm)/56 Ohm                                                                     |

|                           |                                                                                                                                                          |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Spannungsversorgung ..... | 120V, 60Hz für USA und Kanada 220V, 50Hz für Europa außer GB 240V, 50Hz für GB und Australien 110V/120V/220V/240V, 50/60Hz umschaltbar für andere Länder |
| Abmessungen .....         | 440(B)x115(H)x258(T) mm                                                                                                                                  |
| Gewicht .....             | 3,3kg                                                                                                                                                    |

- \* Das Rauschenunterdrückungssystem wird unter Lizenz von Dolby Laboratories Licensing Corporation hergestellt. "Dolby" und das Doppel-D-Zeichen sind Warenzeichen von Dolby Laboratories Licensing Corporation.
- \* Änderungen von Design und technischen Daten zwecks Verbesserung vorbehalten.

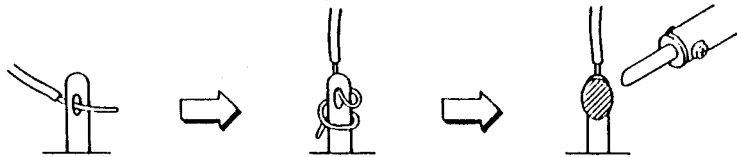
## II. SICHERHEITSANWEISUNG

### SICHERHEITSPRÜFUNG NACH DER REPARATUR

Überprüfen Sie, ob der Isolationswiderstand zwischen den Stiften des Netzsteckers sowie allen äußeren Teilen des Gerätes über 10 MOhm liegt. Bei Geräten mit Anschluß von Außenantenne (Tuner, Empfänger usw.), welche für [C] oder [A] bestimmt sind, muß der Isolationswiderstand über 2,2 MOhm liegen (Masse-Anschlüsse, Mikrofonbuchsen, Kopfhörerbuchsen, line-in/out-Buchsen usw.)

### VORSICHTSMASSNAHMEN BEI DER REPARATUR

1. Die mit dem  Symbol bezeichneten Teile sind ausschlaggebend für die Betriebssicherheit. Diese Teile nur gegen Original Ersatzteile austauschen.
2. Zusätzlich werden andere Teile entsprechend den Gesetzen zur Funkentstörung verwendet. Diese dürfen nur gegen die vorgeschriebenen Bauteile ausgetauscht werden.  
Beispiele: HF-Wandler, Tuner-Komponenten, Antennen-Wahlschalter, HF-Kabel, Entstörkondensatoren, Entstörfilter usw.
3. Nur die vorgeschriebene interne Verdrahtung verwenden. Hierbei besonders beachten:
  - 1) Mit PVC-Umhüllung versehene Leitungen.
  - 2) Doppelt isolierte Leitungen.
  - 3) Hochspannungsleitungen
4. Für gefährliche, stromführende Teile die vorgeschriebenen Isoliermaterialien verwenden. Hierbei besonders beachten:
  - 1) Isolierband
  - 2) PVC-Umhüllung
  - 3) Abstandshalter
  - 4) Isolierscheiben für Transistoren
5. Plastikschrauben zum Anbringen von Mikroschaltern (speziell bei Plattenspielern)
5. Beim Austausch von Bauteilen auf der Primärseite (Transformatoren, Netzkabel, Entstörkondensatoren usw.) Sind die Leitungsenden vor dem Löten fest zu umwickeln.



6. Es ist darauf zu achten, daß Leitungen nicht in Kontakt mit Wärme erzeugenden Teilen kommen (Kühlkörper, Oxidmetallschichtwiderstände, Sicherungswiderstände usw.)
7. Überprüfen, dass die ausgetauschten Leitungen nicht in Kontakt mit scharfen Kanten oder spitzen Teilen kommen.
8. Desgl. sind die Bereiche in der Umgebung von Stellen, an denen repariert wurde, zu überprüfen.
9. Darauf achten, daß keine Fremdkörper (Schrauben, Lot, usw.) im Gerät verbleiben.

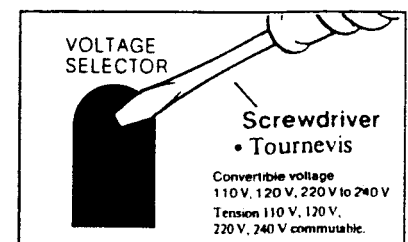
## III. GERÄT VERBLEIBEN

### 3-1 SPANNUNGUMSTELLUNG

Die für Kanada, USA, Europa, GB und Australien bestimmten Geräte sind nicht mit dieser Vorrichtung ausgestattet. Jede Maschine wird bereits im Werk entsprechend dem Bestimmungsland eingestellt. Einige Geräte jedoch können je nach Anforderung auf 110V, 120V, 220V, oder 240V umgeschaltet werden.

Falls ihr Gerät umgestellt werden kann:

Vor dem Anschließen des Netzkabels den SPANNUNGSWÄHLER (VOLTAGE SELECTOR) an der Rückseite des Geräts mit Hilfe eines Schraubenziehers drehen, bis die korrekte Spannung angezeigt wird.



#### 3-1-1 FREQUENZUMSTELLUNG

Da der HX-A1 mit einem GLEICHSTROM-MOTOR ausgerüstet ist, erübrigt sich die Frequenzumstellung.

## V. MECHANISCHE EINSTELLUNG

### 5-1 MESSUNG DES ANDRUCKES DER ANDRUCKROLLE (Siehe Abb. 5-1)

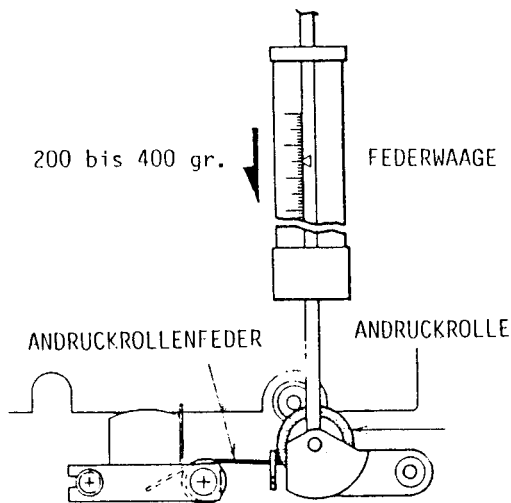


Abb. 5-1

Das Gerät auf Wiedergabebetrieb (PLAY) schalten. Den Andruckrollenhebel mit der Federwaage nach unten drücken und die Andruckrolle 1 bis 2 mm von der Tonwelle wegschieben und langsam freigeben. In dem Augenblick, in dem die Andruckrolle die Tonwelle berührt und sich zu drehen beginnt, den Meßwert auf der Federwaage ablesen. Die Andruckkraft sollte zwischen 200 und 400 gr liegen. Falls der Meßwert nicht in diesem Bereich liegt, muß die Andruckrollenfeder eingestellt oder ausgetauscht werden.

### 5-2 MESSUNG DES BANDZUGES IN ALLEN BETRIEBSARTEN (Siehe Abb. 5-2)

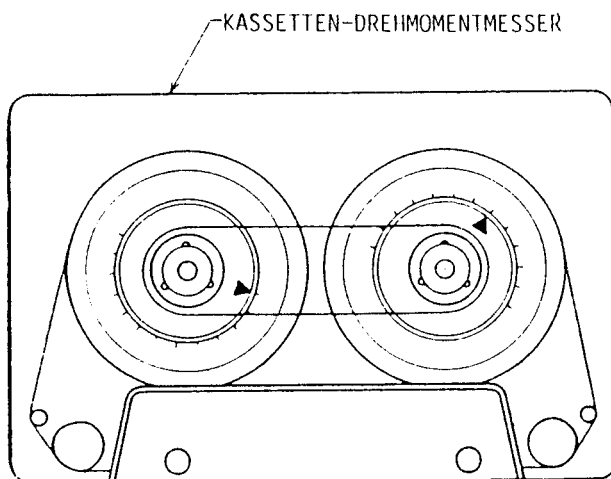


Abb. 5-2

Einen Kassetten-Drehmomentmesser (AJ-751179) einlegen und die Messung in allen Betriebsarten vornehmen. Beim Schnellvorlauf und -rücklauf die Messung nach dem Stoppen des Bandes am Bandende vornehmen.

Wiedergabebetriebsart (PLAY)

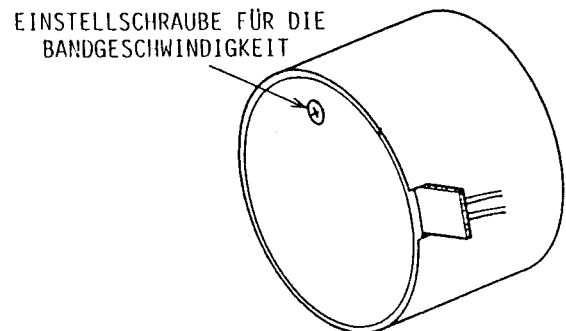
Aufwickelzug: 35 bis 75 Gr-cm

Abwickelzug: 1 bis 6 Gr-cm

Schnellvor/rücklauf-Betriebsart (FAST FORWARD, REWIND)

Wickelzug: 70 bis 160 Gr-cm

### 5-3 EINSTELLUNG DER BANDGESCHWINDIGKEIT (Siehe Abb. 5-3)



CAPSTAN CAPSTAN-MOTOR

Abb. 5-3

Einen Frequenzzähler an den Ausgangsanschlüssen anschließen. Ein 1000Hz oder ein 3150Hz Bandgeschwindigkeits-Testband (AT-750774) abspielen und mit Hilfe der Einstellschraube die Bandgeschwindigkeit so regulieren, daß ein Ausgangswert von  $1000\text{Hz} \pm 10\text{Hz}$  bzw.  $3150\text{Hz} \pm 10\text{Hz}$  erreicht wird.

### 5-4 AZIMUTHEINSTELLUNG DES AUFNAHME/WIEDERGABEKOPFES (Siehe Abb. 5-4)

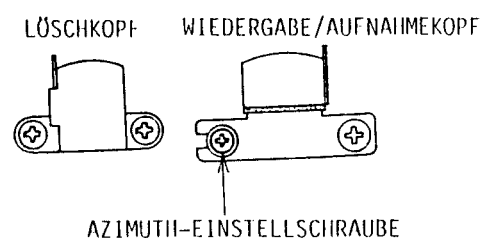


Abb. 5-4

Ein 10kHz Azimuth-Eichband (AT-750778) abspielen und die Azimuth-Einstellschraube so einstellen, daß beide Kanäle Maximalpegel abgeben. Nach der Einstellung die Schraube mit Lack fixieren.

## 5-5 AUFNAHMESCHALTERZUG

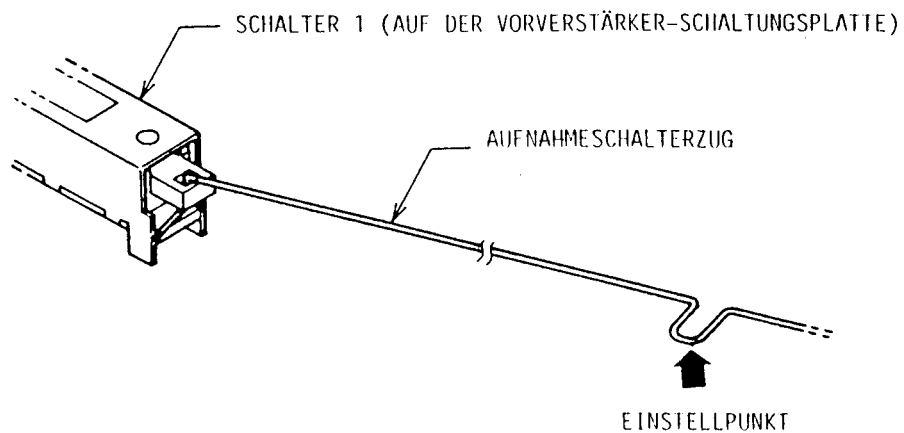


Abb. 5-5

Den Einstellpunkt des AUFNAHMESCHALTERZUGS so einstellen, daß Schalter 1 in der Aufnahmebetriebsart (REC) vollständig herausgezogen wird bzw. in der Wiedergabebetriebsart (PB) vollkommen freigegeben wird.

# VI. VERSTÄRKEREINSTELLUNG

## 6-1 VORVERSTÄRKER-ABGLEICHPUNKTE

PRE AMP PCB (T2064A501A to 503A)

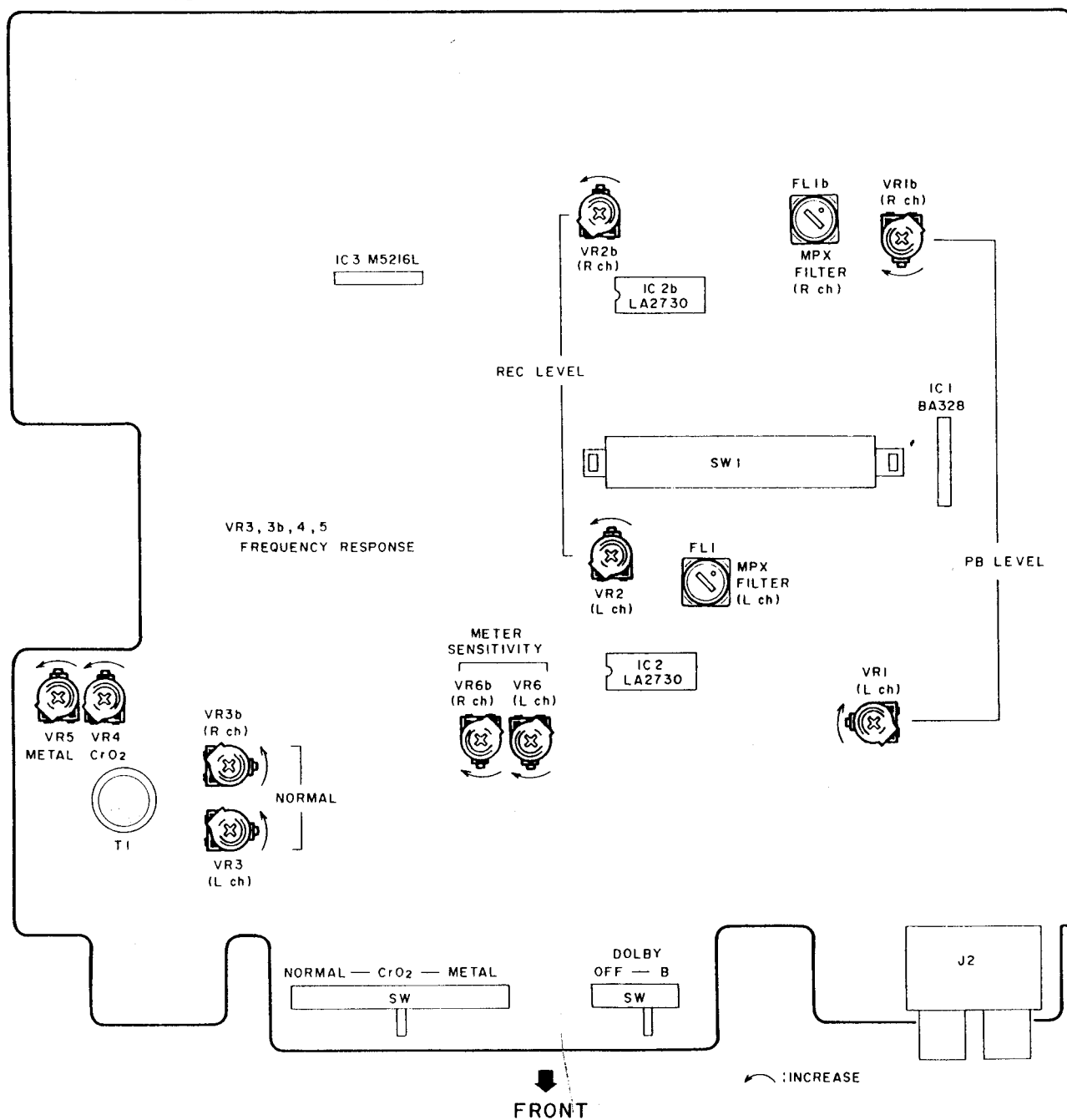
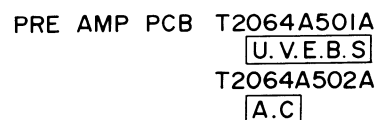
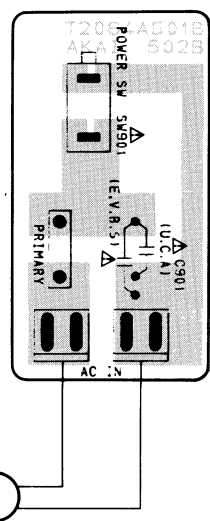
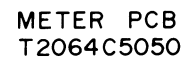


Abb. 6-1

| Schritt | Abgleichge-<br>genstand                               | Testcassetten-<br>Signal                                              | Betriebs-<br>art | Abgleich                      | Ergebnis                                               | Bemerkungen                  |
|---------|-------------------------------------------------------|-----------------------------------------------------------------------|------------------|-------------------------------|--------------------------------------------------------|------------------------------|
| 1       | PB LEVEL                                              | 315Hz<br>oder<br>333Hz                                                | PB               | VR1<br>(Lch)<br>VR1b<br>(Rch) | $-6,1 \pm 0,5 \text{dBm}$<br>$-6,6 \pm 0,5 \text{dBm}$ |                              |
| 2       | NORMAL<br>POSITION<br>FREQUENCY<br>RESPONSE           | NORMAL<br>Leercassette<br>1kHz, 10kHz<br>$-26,0 \text{dBm}$           | REC/PB           | VR3<br>(Lch)<br>VR3b<br>(Rch) | 1kHz, 10kHz<br>linear<br>$\pm 0,3 \text{dBm}$          |                              |
| 3       | CrO <sub>2</sub><br>POSITION<br>FREQUENCY<br>RESPONSE | CrO <sub>2</sub><br>Leercassette<br>1kHz, 10kHz<br>$-26,0 \text{dBm}$ | REC/PB           | VR4                           | 1kHz, 10kHz<br>linear<br>$\pm 0,8 \text{dBm}$          |                              |
| 4       | METAL<br>POSITION<br>FREQUENCY<br>RESPONSE            | METAL<br>Leercassette<br>1kHz, 10kHz<br>$-26,0 \text{dBm}$            | REC/PB           | VR5                           | 1kHz, 10kHz<br>linear<br>$\pm 0,8 \text{dBm}$          |                              |
| 5       | REC LEVEL                                             | NORMAL<br>Leercassette<br>1kHz, $-6,0 \text{dBm}$                     | REC/PB           | VR2<br>(Lch)<br>VR2b<br>(Rch) | $-6,0 \pm 0,5 \text{dBm}$                              |                              |
| 6       | METER<br>SENSITIVITY                                  | 1kHz, $-2 \text{dBm}$<br>(606mV)                                      | REC              | VR6<br>(Lch)<br>VR1b<br>(Rch) | OVU LED hell                                           | OVU = 606mV                  |
| 7       | MPX<br>Filter                                         | 19kHz                                                                 | REC              | FL1<br>(Lch)<br>FL1b<br>(Rch) | Ausgang<br>Minimum                                     | Weniger als $-30 \text{dBm}$ |

- HINWEIS: 1. Alle Abgleiche werden ohne Dolby ausgeführt.  
 2. Die folgenden Messcassetten verwenden:  
     NORMALBAND:           Maxell UDI C-60  
     CrO<sub>2</sub>-BAND:           TDK SA C-60  
     REINEISENBAND:       TDK MA C-60  
 3. Bezüglich Abgleich siehe Abb. 6-1

## PC BOARD SCHEMATIC DIAGRAM



```

TRANSISTOR
TR1-----F2      IC1-----F4
TR1b-----F6     IC2-----D3
TR2-----C3       IC2b-----D5
TR2b-----B2     IC3-----C5
TR3-----C2
TR3b-----B2
TR4-----A2
TR5-----A2
TR6-----A5
TR7-----A5
TR8-----A5
TR9-----A5
TR10-----B4
TR11-----C4
TR12-----B5
TR12b-----C5
TR13-----B6
TR13b-----C5
TR100-----A6
TR10I-----A6
TR11O-----F6
TR11Ob-----D6

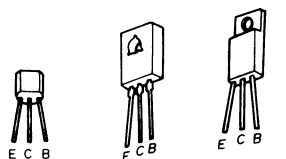
```

PNP TRANSISTOR  
NPN TRANSISTOR

```

TR 1, 1b, 2, 2b, 3, 3b
    12, 12b, 13, 13b, 101-----2SC3383
TR 4, 5-----2SC2274
TR 6-----2SD313
TR 7, 8, 9, 10-----2SC2320
TR 11-----2SB774
TR 100-----2SB632
TR 110, 110b-----2SC1843

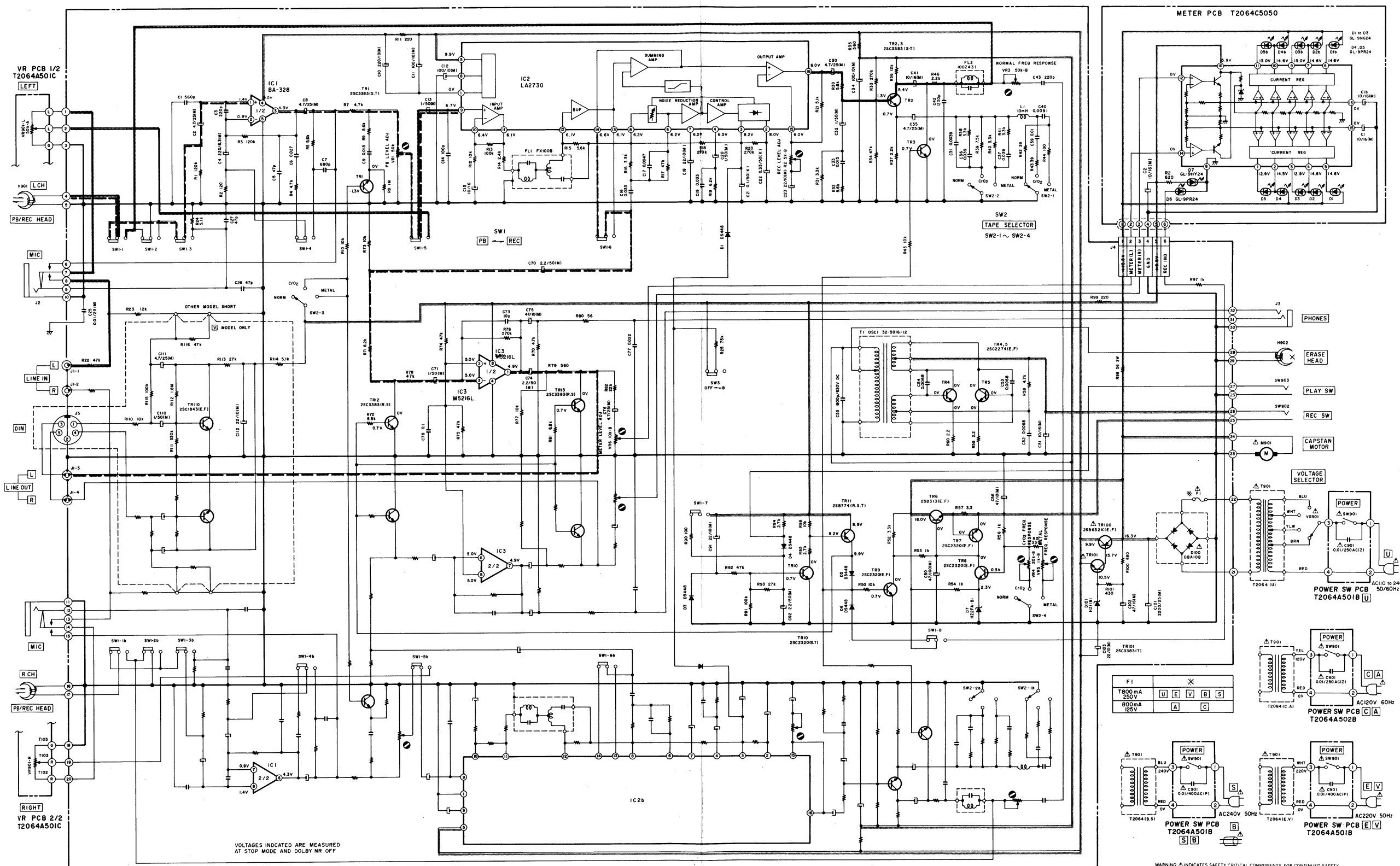
```



2SC1843      2SB632      2SD313  
2SC2320  
2SC3383  
2SC2274  
2SB774

**WARNING:**  INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

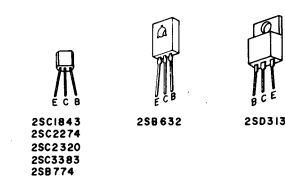
**AVERTISSEMENT:**  IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT



— REC SIGNAL LINE  
 — PB SIGNAL LINE  
 — B POWER SUPPLY LINE

VOLTAGE AT REC MODE

| TR | IC1  | IC2  | METAL | TR | IC1   | IC2   | METAL |
|----|------|------|-------|----|-------|-------|-------|
| 2  | 0V   | 0.1V | 0.1V  | 2  | 2.4V  | 2.3V  | 2.3V  |
| 3  | 0.3V | 4.3V | 7.1V  | 3  | 3.7V  | 5.1V  | 8.2V  |
| 4  | 0.2V | 0V   | -0.4V | 4  | 3.0V  | 3.0V  | 2.9V  |
| 5  | 0V   | 0.1V | 0.1V  | 5  | 3.2V  | 4.6V  | 7.6V  |
| 6  | 3.0V | 4.3V | 7.2V  | 6  | 15.4V | 15.0V | 14.6V |
| 7  | 0.2V | 0V   | -0.4V | 7  | 3.7V  | 5.2V  | 8.2V  |



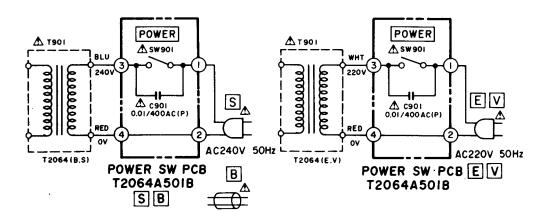
PRE AMP PCB T2064A501A U, E, V, B, S  
502A C, A

NOTE  
UNLESS OTHERWISE SPECIFIED  
ALL RESISTORS IN OHMS (1/4W)  
ALL CAPACITORS IN μF (50V)  
POWER TRANSFORMER IS DIFFERENT  
ACCORDING TO AREA

WARNING: INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.  
AVERTISSEMENT: Δ, INDIQUE LES COMPOSANTS CRITIQUES DE SECURITE. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL, NE REMPLACER QUE DES PIECES RECOMMANDEES PAR LE FABRICANT.

F I

| T800 mA | 250V | U | E | V | B | S |
|---------|------|---|---|---|---|---|
| 800 mA  | 250V | A | C |   |   |   |



HX-A1 PRE AMP  
SCHEMATIC DIAGRAM  
No. 840703A